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Random Notes of a Sanatorium Physician

D. R. Chisholm, M.D.

Kealia, Kauai

Statistics reveal that in the United States tuberculosis kills twice as many people annually as are killed by automobile accidents. About one-third of all deaths between the ages of fifteen and forty-five are due to tuberculosis. Tuberculosis is a common cause of death even in the aged. Notwithstanding all the attempts made within modern times to control tuberculosis, about 55 per cent of cases have advanced disease when diagnosed. Only about 16 per cent have lesions of a minimal extent when first discovered. The tragedy of this is that early tuberculosis is one of the most curable of diseases. Advanced tuberculosis is difficult to cure, and, when "cured," often leaves sequelae which cripple the patient.

The private physician can do much to change the unfavorable ratio of minimal to advanced cases of tuberculosis. This should not be taken to infer that the private physician is largely responsible for the existing ratio. In the great majority of cases the fault lies with the patient and his circumstances. Most patients with advanced disease do not consult a physician until they do have advanced disease. This, however, should serve only to make the physician more alert to tuberculosis. He should make it a rule that no physical examination is complete without an x-ray of the chest.

The significance of the fact that the patient himself is usually responsible for advanced disease is this: that regardless of the worthiness of the ideal of educating people to an awareness of tuberculosis, the plain truth of the matter is that the class of people who usually have tuberculosis is not very susceptible to education. In general, there are two reasons for this: First, there is the mental attitude which will permit advanced disease to develop. Such is not readily dissipated by persuasion. Secondly, there is the cold fact that, in this class, the necessity of continuously maintaining one's immediate economic circumstances without interruption—loss of a day's pay—makes attention to work more important than attention to health. As one pitiable indigent recently remarked to the writer, "I am too important for taking care of my garden than for taking care of my lungs." The obvious inference is that if the above mentioned ratio is to be reversed, continuously operating, aggressive, case-finding efforts, backed by public health authority, will alone turn the trick.

Positive Sputum and Negative X-ray

A patient may have a sputum positive for acid-fast organisms and yet show no x-ray evidence of pulmonary tuberculosis. If the organisms are true tubercle bacilli, as they nearly always are, the patient has tuberculosis. The tubercle bacillus does not exist in the human body except as a manifestation of disease. Rarely, the combination of negative x-ray and positive sputum is due to a tuberculous tracheobronchitis. Usually, however, it is due to one of two causes, viz: ulceration of caseous hilar nodes into a bronchus, or the presence of a cavity, obscured by the heart shadow, in the subapical portion of the lower lobe.

When one considers the frequency with which caseous glands in the neck lead to ulceration through the skin, rupture of hilar glands into immediately adjacent bronchi should not be considered a curiosity. Although the difficulty of confirming or excluding such a diagnosis clinically is great, the fact that caseous hilar glands are so much more common than caseous cervical glands would lead one to believe that communication between the former and the bronchi is more frequent than is suspected. The development of such a sinus tract may mark the onset of an obstinate cough and persistent "bronchitis" in children.

It is sometimes startling how frankly an x-ray taken in the oblique position, will reveal the cause of a positive sputum to be a lone cavity lurking behind the heart shadow in the postero-anterior film.

Acid-fast organisms in the sputum are to be considered tubercle bacilli until proved otherwise. This holds whether the organisms are found on direct smear, by concentrates, or by culture. Occasionally, however, the organism is a non-pathogenic acid-fast. If the x-ray and the bronchoscope fail to demonstrate a tuberculous lesion, and acid-fast organisms can be repeatedly cultured from the sputum, one assumes a grave responsibility in excluding tuberculosis without first determining that the organism is non-pathogenic to the guinea

pig. The organisms may be coming from a tiny sinus tract between a gland and a bronchus.

PERIBRONCHIAL TUBERCULOSIS

The arborescent shadows which are visible in the lung fields by x-ray, and which are normally most marked in the lower part of the lung, are predominantly produced by the pulmonary arteries and veins. Contrary to a common conception, these normal shadows are not produced by the bronchi. The enlargement and increased density of these shadows in left ventricular failure indicates their vascular nature.

The parenchymal lymphatics of the lungs closely follow the course of the vascular markings. Accentuation of the vascular markings of the lungs is brought about by any process which leads to perilymphatic infiltration and fibrosis. Such a change is common in tuberculosis, but it is also very common in other pulmonary conditions. It may persist for months following the resolution of lobar pneumonia, bronchopneumonia, or any type of pneumonitis. It may persist for years following complete arrest of a primary or secondary tuberculous infiltration. It is common in chronic sinus infection. It is often seen in children who have a negative Mantoux reaction.

It is important not to conceive of "peribronchial infiltration" as a tuberculous entity. Increased density of the perivascular markings to the upper lobes may or may not be of tuberculous origin. If of tuberculous origin, they may represent merely the lymphatic fibrosis of a parenchymal lesion long since absorbed and arrested. In such cases they have no more significance than any other well healed scar within the lungs. There is no justification for saddling a patient with the diagnosis of "peribronchial tuberculosis" merely because of accentuated lung markings. If the physician reading the plate is not sufficiently sure of the pathology and its significance, serial plates at intervals of a few months will soon tell him whether the increased markings are significant or not. Of course, with a definite history of pulmonary tuberculosis, all patients, whether they do or do not have increased perivascular markings, should have periodic x-ray examinations.

THE X-RAY VERSUS THE STETHOSCOPE IN THE EARLY DIAGNOSIS OF TUBERCULOSIS

The Subcommittee on Case-finding Procedures in Tuberculosis of the American Public Health Association, commenting on the diagnosis of pulmonary tuberculosis by percussion and auscultation, states:[1] ". . . experience has now clearly indicated that the early or minimal lesions are almost invariably missed by this method, and, as a matter of fact, many of the more advanced lesions are not detected by a large number of examiners."

Experience, too, based on controlled series, shows that fluoroscopic examination is unable to detect many early cases of tuberculosis.

The Mantoux test does not differentiate between active and arrested disease.

A positive sputum is the only absolute proof of the presence of tuberculosis, but extensive disease may exist with a negative sputum.

The x-ray, read by a qualified physician, will present optical proof of the presence of even very small pulmonary infiltrations; and any abnormal infiltration, no matter what its pathological nature, should be followed by serial x-rays until its significance is revealed. When the infiltration is tuberculous, the evidence of serial plates may not be absolute, but it will be so strongly presumptive that little doubt will remain as to what course of treatment is indicated.

The conclusion, then, is that in the absence of a positive sputum there is only one way in which to discover the early tuberculous infiltration, and that is to take an x-ray. All other methods are grossly and morally inadequate.

A FREQUENTLY DIAGNOSED RARITY

True, primary, chronic bronchitis is a rare entity. Yet it is very commonly diagnosed. To diagnose it, and to prescribe for the chief complaint, cough, without looking for the cause of that cough, is as serious a dereliction of medical morals as the prescribing of morphine for abdominal pain without ascertaining the cause of that pain. Among the causes of "chronic bronchitis" may be: bronchiectasis, tuberculosis, emphysema, left ventricular failure, aneurism, chronic lung abscess or its sequelae, and bronchial tumors. Chronic sinus infection is always a cause to be considered. In children, two common causes of chronic cough are foreign bodies in the lungs and a purulent rhinitis due to foreign bodies in the nose. The writer has seen several cases of chronic bronchitis in children clear up after wads of foul-smelling newspaper and toilet paper had been removed from the nasal cavities. Children love to experiment with their orifices.

1. National Tuberculosis Association: "A Manual of Tuberculosis Case-Finding," 1940, p. 31.

The physician who diligently searches for the cause of his patients' coughs will seldom make the diagnosis of a primary chronic bronchitis.

ASTHMATOID BREATHING
ASTHMA AND THE HEART

It is important to keep in mind that the type of breathing usually considered characteristic of allergic asthma is by no means pathognomonic of allergic bronchial constriction. Identical paroxysmal breathing, including the musical rales, often occurs in pulmonary fibrosis, and commonly, of course, in left ventricular failure. However, the primary cause of such breathing apparently need not necessarily be a diffuse encroachment on bronchial diameter. The writer can recall a case of asthma diagnosed by a prominent physician. When the patient died, the uncontrollable asthma was found at post mortem to be due to an aneurism. A patient seen recently with a history of asthma lasting three weeks turned out to have a tuberculous pericarditis with effusion.

Asthmatics seldom die of asthma. This is a common impression, and it appears to be true. Asthmatics commonly die of right heart failure. This is a common impression, but there appears to be good reason to question its truth. Rubin, after a very thorough investigation of the heart in asthma and emphysema concluded that cardiac enlargement in long-standing emphysema and asthma is rare.[2] Right ventricular enlargement was the rarest finding in Rubin's cases. Many asthmatics *appear* to die of right sided heart failure because all long-standing asthmatics have emphysema. Kountz and Alexander of Washington University School of Medicine have shown that the venous backpressure and anoxemia of advanced emphysema will produce a syndrome (rapid heart, dyspnea, cyanosis, and dependent edema) so closely resembling heart failure that careful consideration of the differential diagnosis is necessary. Rubin quotes post-mortem evidence as revealing that the effect on the right ventricle of capillary obliteration in the emphysematous lung has been grossly exaggerated.

When one considers how effectively the raised intrathoracic pressure of advanced emphysema protects the heart from an increased venous return, it is easy to see why the heart is seldom enlarged in emphysema and asthma, and why true heart failure may perhaps be even less common in this group of patients than it is in the population as a whole.

2. Rubin, E. L.: Size of Heart in Asthma and Emphysema, Lancet 2:1089 (Nov. 7) 1936.

BRONCHITIS IS OFTEN A SILENT DISEASE, ESPECIALLY IN CHILDREN

Bronchiectasis is a very common disease. Hemoptysis is a very common symptom of bronchiectasis. All patients with bronchiectasis do not have profuse sputum, and in many of those in whom the sputum is profuse it is not foul-smelling. The patient with the least expectoration may be the one with the foulest breath.

Many bronchiectatics have little or no indication of their pulmonary pathology until they develop an acute respiratory infection. Prolonged mucopurulent expectoration following attacks of the common cold in a person who ordinarily has a slight, almost non-productive cough should arouse a strong suspicion of bronchiectasis.

THE TREATMENT OF LUNG ABSCESS

Ten years ago, physicians and surgeons were arguing among themselves as to whether acute pulmonary abscess should be treated by operative or non-operative measures. The mortality from medical and delayed surgical treatment averaged around 35 per cent. To-day, based almost entirely on principles conceived and practiced by Neuhof, the mortality from acute lung abscess may be held as low as 4 per cent.

Except in some cases of acute aerobic (usually bronchopneumonic) abscesses, acute pulmonary abscess should be submitted to early operation and drainage under local anesthesia. The sequelae of chronic bronchial suppuration and pulmonary fibrosis in abscesses "cured" by a non-intervention policy may be the price of such conservatism. The fact that an occasional abscess will clear up without sequelae under non-operative treatment is not an argument for delaying surgical treatment.

INTERPRETATION OF X-RAY FILMS

Please do not ask your roentgenologist or other consultant to read any x-ray without first supplying him with the clinical history. An x-ray is only a shadow. The clinical history is often the only clue to its cause. An infiltration along the lower lobe bronchi may be bronchopneumonic, tuberculous, or malignant; it may represent bronchiectasis, influenzal pneumonitis, or left heart failure. A radiating hilar shadow may represent beginning lobar pneumonia, hilum pneumonia, lung abscess, tuberculosis, Hodgkin's disease, or an interlobar effusion. It makes a lot of difference whether that cavity in the upper lobe is accompanied by a positive sputum, by a putrid sputum, or by a fluctuating swelling in the supraclavicular fossa containing "sulfur granule" pus.

Meniere's Disease

A Review of Its Diagnostic Features and Report of Four Cases

Tadao Hata, M.D.

Kapaa, Kauai

A disease characterized by recurring attacks of vertigo and unilateral deafness was first recognized by Meniere, a Frenchman, in 1861, as associated with a lesion in the peripheral vestibular organ. He found what is now recognized as a hemorrhagic purulent exudate throughout the semicircular canals, and it was not unnatural that the hemorrhagic content of the exudate should have been regarded as the cause of the disease—a concept which is even at the present time difficult to overcome.

In Meniere's disease, vertigo and reduced hearing are perhaps the two essential symptoms noted. However, only rarely are the other symptoms—nausea, vomiting, tinnitus, shock, and even diarrhea—absent in some of the attacks.

Pathological Physiology

Because in Meniere's disease the attacks are paroxysmal and the mortality low, it can rarely be studied histologically, and thus it has usually been classified not as a disease entity but rather as a combination of symptoms which may occur as a result of any one of several widely separated lesions, namely:

(1) pressure on, or neuritis of, the auditory vestibular apparatus—a belief held by Dandy;

(2) circulatory disturbances — a hypothesis held by Brunner, who concludes that Meniere's disease might better be called "otitis interna vasomotoria;"

(3) disturbance of the peripheral end organs of the vestibular apparatus rather than the central ones—Crowe holds this view, which is entirely opposite to that held by his colleague, Dandy;

(4) increased pressure in the semicircular canals, attributed to faulty water metabolism which allows water to collect within the cells, resulting in overloading of the fluid in the labyrinth. Mygind, Dederding and Furstenberg are its advocates, directing their treatment toward a reduction of the edema by diminishing the fluid intake and by giving a salt-free diet;

(5) disturbances of electrolyte concentration and degree of hydration of the blood—a cause suggested by Talbot and Brown, who conclude that "there is a gradual accumulation of evidence which supports the suggestion that the conduction of the nerve impulses is probably associated with an optimal concentration of potassium in the surrounding medium. Any alteration of this concentration may upset a delicate mechanism;"

(6) local alteration in the permeability of the capillary wall, resulting in local edema, one of the reasons for the attack being an overproduction of histamine—an agent which affects capillary permeability. Sheldon and Horton, in their therapeutic tests to differentiate specific types of headaches, "discovered" this practical use of "desensitization" with histamine.

In the literature studied by Shambaugh, four cases of Meniere's disease with histologic studies are described. The similarity of the findings is striking. Hallpike described three and the fourth was added by Yamakawa. The findings are essentially a marked dilatation of the ductus cochlearis with displacement of Reisener's membrane, and usually the presence of some albumin or colloid material in the cochlear duct or in the ductus or saccus endolymphaticus. The essential pathological physiology is thus an abnormal amount of endolymph with probably some abnormality of its constituents.

The response to present clinical therapeutic measures would suggest several possible mechanisms. The disappearance of symptoms following the removal of foci of infection or of an allergic factor perhaps indicates that these factors may be responsible for the increase of endolymph and accumulation of serum mixed with endolymph. Any treatment that diminishes the tendency to edema, whether it be by limiting the intake of sodium or limiting the total intake of fluid, is in harmony with the histologic findings of abnormal accumulation of endolymph.

It is recognized, however, that all cases are not alike, the attacks of vertigo varying in degree

of severity and in periodicity of recurrence. Nausea, vomiting and tinnitus are not always present and vary greatly in degree. For this reason there is a tendency to differentiate between milder attacks which occur without all the recognized symptoms and the Meniere's syndrome. Crowe considers the presence of recurring vertigo alone, without deafness or tinnitus, sufficient evidence upon which to base the diagnosis.

The presence of tinnitus and varying degrees of deafness probably indicates that the process involves the cochlea as well as the labyrinth. The degree and extent of involvement will determine the major presenting symptoms observed clinically. These clinical observations are in keeping with the observations of Hallpike and Yamakawa. Shambaugh adds that in Meniere's disease; diplacusis is always present when the hearing is affected and concludes that this is proof of involvement of the membranous labyrinth by edema, since diplacusis cannot be produced by a lesion of the nerve or of the central pathways.

An excellent review of the clinical consideration of vertigo is given by Shuster; it will not be discussed here. The author has seen 14 cases, of which 4 are reported here.

CASE REPORTS

Case 1. D.P., a two and a half year old boy, was seen in January, 1942. His mother said he had attacks in which he would fall to the right, the attack lasting not more than a minute. The attacks had begun gradually six months before and were progressively getting worse. The child was able to talk during the attack and, saying "all gone, all gone" he would pick himself up after staggering to the right. There was no nystagmus during the attacks. He had had whooping cough at the age of four months; the past history was otherwise not contributory.

General physical examination revealed no abnormal findings. A caloric test revealed no response from the right horizontal canal. The left showed a normal response. A diagnosis of Meniere's disease was made, although we did not hazard a guess as to the cause. Two weeks later, he developed a right acute suppurative otitis media. A myringotomy was done, followed by an adenoidectomy. In the three months under observation, he has had but four attacks.

Meniere's disease is almost exclusively a disease of middle age or advanced age but the foregoing is a case where the recurrent vertigo began at two years of age and where removal of a focus of infection brought on improvement.

Case 2. I.T., a 52 year old man, was first seen on April 14, 1942, with complaints of having dizzy spells which left him extremely weak. The condition had started three years before. The patient had experienced three identical attacks during 1941, each lasting from two to four hours. Examination revealed an allergic rhinitis with multiple nasal polypi. In 1936, he had had a polypoidectomy. In the left ear, air conduction was absent in the 512-, 1024-, and 2048-frequency tuning forks. The Rinne was positive, with no lateralization of bone conduction. When he was seen, his attack had already lasted four hours, and he was therefore given histamine intravenously; 2.75 mgm. of histamine diphosphate in 250 c.c. of physiologic saline solution eradicated the acute symptoms of vertigo, nausea, and vomiting.

In acute Meniere's disease, it is usually impossible to give any type of medication by mouth because of the associated nausea and vomiting. Histamine has this one chief advantage over other types of therapy.

The mechanism involved in this case may have been an allergic condition resulting in edema and accumulation of fluid gradually encroaching upon the cochlear portion as shown by his reduced hearing on the left. This patient complained of no tinnitus. Diplacusis was not noted.

Case 3. E.H., a 54 year old woman, was first seen in December, 1941, because of attacks of dizziness, nausea, and vomiting. The first attack occurred some three years before, but in the past five months, she had averaged one a week. These attacks usually lasted for two hours; the longest had lasted for three days. Each attack of vertigo was accompanied by shock and an acute attack of diarrhea. She dates her diminished hearing and constant tinnitus of the left ear from about three years ago. In the past month, she had been doctoring herself by taking "gas tablets" every day and was now seeking medical care not for her nausea, but because she was having more attacks of vertigo. There was no history of allergy.

Examination revealed hypertrophic granulation tissue in the post-pharyngeal wall. The membrana tympani were normal in both ears. Hearing test revealed reduced response to tuning forks in all frequencies (negative Schwabach), and a positive Rinne with no lateralization of bone conduction. The Barany test was normal, though the caloric test showed slight delay in the left ear, responding in 1 minute 40 seconds (normal 40 seconds). Patient was taken off the "gas tablets" (which proved to be a sodium bicarbonate compound) and put on Furstenberg's program of a salt-free neutral diet and six capsules of 7½ grains (0.5 grams) of ammonium chloride three times a day for three days, then omitted for two days. (Ammonium chloride is strongly acid, and, being excreted as urea and sodium chloride, assists in ridding the body of surplus accumulations of sodium in edema fluid. After about three days, however, the kidneys "learn" to excrete the ammonium radical as such instead of as urea: hence the two-day intermission, after which ammonium is again excreted as urea.) Our experience is that enteric coated tablets are less effective than the plain tablets. The results have been splendid.

The diagnostic feature here is the presence of all cardinal symptoms, indicating extensive involvement of both the labyrinths and the cochleas. Dietary mistakes or medicine containing sodium salts precipitate attacks in some patients.

Case 4. J.D.T., a 32 year old man, was first seen in November, 1941, with an attack of vertigo, nausea, and vomiting, and in semi-shock. During the attack he noticed ringing in the right ear. These attacks had been occurring for three years; they usually lasted from five to twelve hours, and the patient claimed they were precipitated if he did not take a daily enema of soda and warm water. He had lost seven pounds in one month and complained of a dull headache which he described as a "pressure" inside the skull. He had noticed progressive deafness in his right ear for the past three years.

Examination revealed a diminished Schwabach to the right, a negative Rinne, and a lateralization to the right in bone conduction. A nasopharyngoscopic examination revealed a mucopurulent reservoir in the spheno-ethmoidal recess with a slight deflection of the nasal septum.

A submucous resection was done in December, 1941, which apparently did not contribute toward reducing either the frequency or the severity of the attacks. For immediate treatment he was put on histamine, which brought a prompt response. He is now on the salt-free diet and ammonium chloride regime of Furstenberg. For the past six months, his attacks have been reduced from once every week to once a month. His last severe attack was on March 15, 1942, from which date he has complained of increased recurrences of tinnitus. This patient is able to sense—like an epileptic with his "aura"—an impending attack. We have found that .275 mgm. of histamine diphosphate usually alleviates the symptoms.

The diagnostic feature of this case is the advanced state of the disease.

ADDITIONAL SYMPTOMS

In 6 of the 14 cases seen, headache was one of the cardinal symptoms. This has been described variously as follows: "Feel as though some one is hammering inside against the skull on my left side"; "Throbbing headache on the right half of the head from inside the eye to the back of my neck"; "My headache comes before the dizziness." Usually the patients have taken headache pills, or they may have had an anodyne prescribed for them or have received therapeutic tests with ergotamine to rule out migraine or erythromelalgia of the head. Careful history often clears the patient's misinterpretation of these headaches as that of an attack of vertigo.

We have likewise noticed tinnitus accompanying the attacks of vertigo in 5 of the 14 cases, leaving them free from ringing in the ears between attacks. One had a constant tinnitus.

CONCLUSION

In Meniere's disease, vertigo is the essential feature; it represents a local process involving the labyrinth. The degree and extent of involvement of the labyrinth and cochlea will determine the major symptoms observed clinically. It is possible that progressive deafness without obvious cause may be the result of primary involvement of the cochlea.

Departure from the normal physiological response (caloric test) indicates advanced stages of the disease process. In most cases the caloric tests give results within normal physiological limits. Because of this sequence of the disease, a perfect treatment for Meniere's disease has not been announced. The present report is actuated primarily by the desire to contribute to the clinical study of cases of recurrent vertigo, which, it is to be expected, will be encountered from time to time in patients suffering from Meniere's disease.

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The Loeffler Syndrome

Report of a Case

L. Clagett Beck, M.D.
Koloa, Kauai

In 1931 Loeffler described transient pulmonary infiltrations associated with varying degrees of eosinophilia. Aside from this finding, emphasis was not placed on the allergic relationship until other investigators noted the constant association of an allergic state with this clinical picture which has since come to bear the name of "Loeffler syndrome."

This syndrome usually occurs in children Asthma is the most frequently associated allergic manifestation, although all other types of allergy have been noted. Whenever a definite etiologic agent has been discovered, which has been infrequent, it has most often been found to be an intestinal parasite.

Hoff and Hicks found in reviewing the literature that eosinophilia occurred in about the same proportion and degree in this syndrome as in other allergic conditions. They pointed out that though there may in rare instances be an absence of eosinophiles, they may occasionally rise as high as 60 per cent or more.

The x-ray picture described by Loeffler, and that which is usually encountered, is one in which pulmonary infiltration occurs in varying degrees most frequently in the bases, and shifts or changes its position from time to time. Often the roentgenogram made in the routine examination of an asthmatic or other allergic patient will call attention to the diagnosis. The areas of infiltration tend to disappear very rapidly, leaving only a fine, fibrous, honey-comb type of scar, often to reappear in a new location with any recrudescence.

The case presented is one in which there was a marked allergic reaction, with only slight eosinophilia, and in which the etiologic agent was discovered.

Case Report

E. M., a 15 year old Puerto Rican girl, was admitted to the Koloa Hospital on the evening of March 26, 1942, complaining of generalized malaise and a rather severe non-productive hacking cough occurring in paroxysms for the last week. Two days prior to admission wheals appeared over the abdomen, spreading out over the proximal half of all extremities, including the neck and face. She believed she had had a fever during this time.

Past history revealed that, while otherwise well until the onset of the present illness, she had frequently suffered from rather typical asthma since early childhood. There was no tuberculosis in the family and she had not knowingly been exposed to tuberculosis. There had been no weight loss; her maximum weight was 110 pounds, shortly prior to admission. Past history was otherwise entirely negative.

Physical examination revealed a young, well developed and well nourished girl who looked ill. Her face and trunk were flushed and covered with discrete and confluent wheals which extended down onto the arms and legs. The patient had a dry, hacking, non-productive cough; such sputum as could be obtained was devoid of frothiness, blood tinging, or any special characteristics. There was increased lacrimation. The pharynx was clear. The tonsils were enlarged, but appeared innocuous, and no pus could be expressed from them. The breath had a fetid odor and the patient complained of a bad taste in her mouth. The lymph nodes were not enlarged. The chest was symmetrical and expansion was about equal on both sides. Percussion revealed a very definite area of dullness over the left lower back of the chest, toward the spine. Moist and crackling rales were heard over both bases, anteriorly and posteriorly, and occasional fine rales were heard toward the left apex in the region of the second and third interspaces. Vocal fremitus was increased and pectoriloquy was present over the left lower chest in the back. No limitation of the excursion of the diaphragms on either side was noted. The remainder of the physical examination was negative.

In spite of these findings, the mouth temperature was only 99 F. on admission, without any previous medication. The leukocyte count taken at this time was 34,350; the differential count showed 75 per cent polymorphonuclears, 3 per cent eosinophiles, and 22 per cent lymphocytes. There was a trace of albumin in the urine.

Chest x-ray taken on the night of admission showed an area of infiltration in the lower lobe of the left lung at the diaphragm, extending from the midline from behind the heart shadow. A second less dense area of infiltration was visible near the left apex.

Only a small amount of muco-purulent sputum could be obtained for typing and here pneumococci were conspicuous by their relative absence. After considerable search and typing, it was thought that a type 7 pneumococcus was found. On this basis sulfapyridine therapy was started. The patient was also given adrenalin, which seemed to have an even more transitory effect than is usually encountered in urticaria.

On the third hospital day, the patient complained of pain in the left side of the chest just outside of the precordial region, and for the first time complained of pruritus from the urticaria. The white blood count had risen to 23,450, though it had dropped on the intervening days to levels around 16,000. The temperature had risen to 101.2 F. and the patient was more restless. A chest x-ray taken at this time showed that the area of infiltration in the apex had moved upward and away from the medias-

tinum, and that in the region of the left base the infiltration had shifted upward about an inch, leaving an area of clear lung tissue in between.

The sulfapyridine was discontinued. The temperature gradually returned to normal in the next two days and did not rise again. The pain in the chest abated somewhat, although the patient continued to appear just as ill and the urticaria remained unchanged. Another x-ray of the chest on March 31 showed essentially the same picture as before, except that the area of infiltration in the apex was less dense. The leukocyte count had dropped to 9,700, while the differential count remained about the same. The Mantoux test was found to be negative.

On April 2 the patient's stool was discovered to be heavily infested with ova of strongyloides intestinalis and ascaris. The patient was given Sharp & Dohme 'Crystaloids', following which several ascaris were passed. The stools were negative thereafter. The day after this treatment the patient suddenly showed marked improvement; her urticaria had entirely disappeared and she appeared bright and alert.

A chest x-ray on April 8 showed that the infiltration at the left apex had entirely disappeared and the infiltration at the left base had become much smaller and much less dense. On April 10 the patient was discharged from the hospital entirely asymptomatic, and when seen on subsequent visits to the office had no signs of recurrence.

DISCUSSION

This case seems to demonstrate several interesting points. The peculiar characteristics of the transitory and shifting pulmonary infiltrations are to be seen in the accompanying illustrations.

At no time in this patient did the eosinophilia exceed 6 per cent, although it was always present to the extent of at least 3 per cent. Such a low eosinophile count, though not common, is said to occur in a small proportion of other allergic states.

While in the majority of cases it has been impossible to find the etiologic agent for the underlying allergic condition, it has most often been traced—when found at all—to an intestinal parasite. In this case two separate parasites were found, strongyloides intestinalis and ascaris, both of them very frequently harbored in the Puerto Ricans in Hawaii. Furthermore, as in the Hoff and Hicks case[3] and others in which the agent was found and immediately removed, the disappearance of symptoms was almost dramatic.

This case appears to fulfill very adequately the clinical picture of the Loeffler syndrome as set down in the literature.

SUMMARY

A case of the Loeffler syndrome is presented in which the disappearance of clinical signs and symptoms immediately followed the removal of a probable etiologic agent or agents.

This case is typical of the Loeffler syndrome in that it occurred in a young individual. There was never any marked elevation of temperature in proportion to the apparent illness of the patient. X-ray findings showed pulmonary infiltrations in the left base and left apical region, both of which shifted somewhat during the course of the disease, the former upward and the latter outward. The apical infiltration varied considerably in intensity before specific treatment was instituted. Although the patient gave a history of asthma from childhood, the allergic manifestation at the time of the present illness was a severe urticaria. The eosinophilia was lower than in the majority of cases of this syndrome. The probable etiologic agents, intestinal parasites, were found, and upon their removal all signs and symptoms promptly disappeared.

881 Young St.
Honolulu

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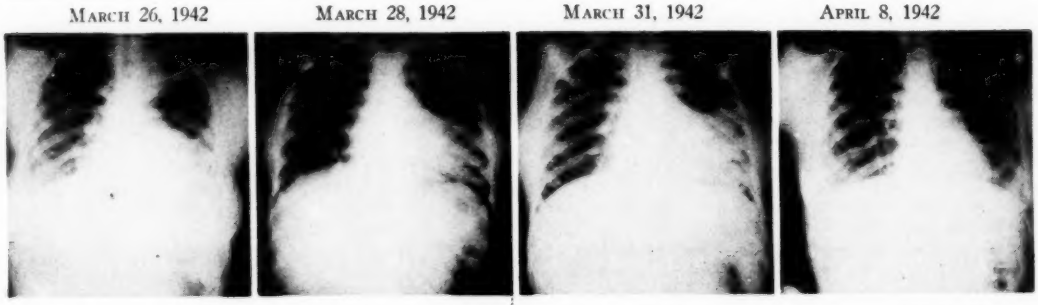
MARCH 26, 1942 MARCH 28, 1942 MARCH 31, 1942 APRIL 8, 1942



Massive Dose Arsenotherapy of Early Syphilis

Adapted to Plantation Use: Report of Nine Cases

Sam R. Wallis, M.D.

Lihue, Kauai

"Fools rush in where angels fear to tread" could undoubtedly be said of a plantation doctor doing general practice who uses massive dose arsenotherapy for early syphilis.

The purpose of a paper on this subject with only 9 cases to report is not to add anything to the original work of Hyman[1] and his associates but to show that in certain selected cases this method of treatment of early syphilis does have a place in the plantation doctor's armamentarium in the treatment of this disease.

Syphilis has never been a serious problem to the plantation physician in Hawaii. About 8 to 10 per cent of serologic tests for syphilis were positive on the island of Kauai several years ago (1935-1938). However, it must be remembered that the majority of the tests were made on people suspected of having syphilis and also on laborers who were frequently shifting from one plantation to another. Naturally a high percentage of positive tests could be expected among such people. However, during seven and one half years of practice on one of the larger sugar plantations I have seen (and recognized) only eight or ten cases of primary syphilis and about the same number of cases of secondary syphilis.

Nevertheless syphilis is present, and it behooves us to try to eliminate it. Probably the treatment of syphilis by individual physicians varies as much as does the treatment of the common cold. True, all doctors use arsenic and bismuth as their main drugs, with mercurials and iodides as auxiliary weapons, but the actual rules for giving the drugs vary widely. The massive dose technique is just another variation of the use of arsenic, and not so radical as one might believe.

Many years ago Ehrlich gave us the result of his six hundred and sixth attempt to find a drug to cure syphilis, in the form of arsphenamine. It was his hope to cure syphilis with one or two injections of this drug. He was doomed to disappointment, because the drug was too toxic in doses strong enough to completely rid the body of the spirochaeta pallida. His massive arsenotherapy was replaced by multiple injections of arsenic and administration of the heavy metals. While the multiple injection method has proved effective and will always no doubt be the most important method of treating any type of syphilis, still it has its disadvantages, the most important one being the length of time an individual is under treatment. This is a decided handicap on a plantation where patients with syphilis are frequently moving elsewhere and where they must be forced to take treatment.

When symptoms of syphilis have disappeared, unless the patient has had the horrors of the disease instilled into his very soul, it is most difficult to get him to continue the treatment. His ulcer is cured; why take more treatments? His skin rash is gone; why take medicine that will make him sick once or twice a week?

Even though Dr. George Baehr[2] of New York in speaking of the massive dose therapy said, "The technique should not be released to the general profession at present, not until a still wider hospital experience has been gained," it was thought that the cases reported here were justified in receiving this treatment.

Case Reports

Case 1 was a 22 year old Japanese prostitute who presented herself to the plantation dispensary for a routine weekly examination. Her Wassermann and Kahn were positive. She had no evidence of a primary lesion and had no secondary manifestations. She gave a definite history of a negative blood test three months before with a note from a reputable Honolulu physician to prove it. Under such circumstances it seemed reasonable to assume the disease in this individual was of short duration.

This woman was a menace to our community. Our first impulse was to send her back to Honolulu. It was feared, however, that she might be lost for purposes of treatment if she went back, and would in the meantime infect many people. It was at about this time that the work of Hyman and his associates received much publicity in one of the current lay magazines.

She was admitted to Wilcox Memorial Hospital July 11, 1940, and had the so-called "five-day treatment," using the method and procedure as outlined in detail by Hyman and his associates.[1] She was given 0.2 grams

of Mapharsen daily, making a total of 1.0 grams of Mapharsen for the entire time. She was discharged July 16, 1940 and allowed to return to her profession one week after treatment. To date no cases of syphilis on Kauai have been traced to her.

In Hyman's original article the average time for the achievement of seronegativity is given as slightly over twelve weeks. Blood tests were taken on each day of treatment and at short intervals thereafter. Laboratory reports for this woman show the following results:

DATE	WASSERMANN	KAHN
7- 2-40	3 plus	4 plus
7-11-40	4 plus	4 plus
7-12-40	4 plus	4 plus
7-13-40	4 plus	4 plus
7-14-40	3 plus	4 plus
7-15-40	3 plus	4 plus
7-16-40	Negative	4 plus
7-19-40	Negative	4 plus
7-30-40	Negative	4 plus
10- 8-40	Negative	3 plus
11-19-40	Negative	Negative
1-13-41	Negative	Negative
4- 7-41	Negative	Negative
8-10-41	Negative	Negative
1- ?-42	"Positive"	"Positive"

About January 1942 it was learned from correspondence with a doctor on another island that this woman had a positive Wassermann and Kahn. She was still practising her profession. She may have had a new infection. If so, undoubtedly she had a cure by the five day treatment; but if she had a spontaneous reversal of her blood serology, we must assume that the treatment was a failure. We will probably never know which was the case.

Case 2 was also a Japanese prostitute, 24 years old. She had a definite "rash" similar to the eruption of early measles. Her serology was found to be positive. She was admitted to the hospital August 7, 1940, given the treatment, and discharged August 13, 1940.

The rash cleared immediately and in a week or ten days the woman was allowed to return "to work". Very shortly after treatment she gained ten pounds and improved in general health. She was followed by weekly examinations and blood tests and had a complete serologic reversal at the end of the thirteen weeks.

Case 3 was a 19 year old Korean girl treated in September 1940. In July 1940 this patient had been given a routine examination for employment and her Wassermann was negative. She was married shortly afterwards and was not seen until September when her husband applied for work at the plantation and was found to have a positive Wassermann. The girl's Wassermann was taken again and was found positive. She was hospitalized and given a five day treatment. Her husband was given routine weekly treatments.

On November 25 her Wassermann was negative. She became pregnant in December 1940 and had a perfectly normal pregnancy with a normal delivery and normal child, weighing 8 pounds 1 ounce in September 1941. Cord Wassermann at this time was negative. Child's Wassermann in May 1942 was negative. This patient is again pregnant and a routine Wassermann is again positive. This is probably a recurrence.

It is planned to repeat the five day treatment on this woman even though she is several months pregnant.

Case 4, a 36 year old Portuguese tractor driver, who was exposed on February 18, 1941, was seen on March 26, 1941 with a suspicious lesion on the prepuce. Darkfield on March 28 showed, according to pathologist's report, "Chancre on underneath side of penis literally teeming with spirochetes." Wassermann and Kahn positive.

Treatment was started on March 29 at which time darkfield was still positive but only slightly so. On March 30, "Lesion more clean than day before and darkfield negative." This man completed his treatment without complication except a low grade thrombophlebitis of the right arm, and went back to work in April 1941. Wassermann and Kahn negative in May 1942.

Case 5, a 30 year old Filipino, came to the dispensary in April 1941 with a penile lesion, darkfield negative but Wasserman and Kahn reaction positive.

Patient sent to hospital April 7, 1941 and had the five day treatment. The day after treatment was completed the lesion was almost completely healed. The Wassermann was checked again and found to be negative in May 1942.

Case 6, a 33 year old Filipino cane cutter, entered the hospital August 12, 1941, with a positive darkfield and negative Wassermann. He was given routine treatment. The chancre was free of spirochetes on the second day. The chancre was not healed on discharge from hospital on August 17; however, it did heal within ten days after discharge. Wassermann was never positive in this case. Shortly after completion of treatment, patient went to Honolulu and a further record was never obtained.

Case 7, a 33 year old Filipino cane cutter who had a darkfield positive chancre on the penis but negative Wassermann, entered hospital August 19, 1941 and was discharged August 25. Chancre healing on discharge from hospital. Wassermann still negative on September 8, 1941. Patient was lost by going to Honolulu in January, 1942; no record could be obtained.

Case 8, a 50 year old laborer, was admitted to the hospital August 27, 1941 with a penile chancre which was positive for spirocheta pallida, and discharged September 2. Wassermann negative on admission and still negative in May 1942.

Case 9 was a 21 year old part Hawaiian prostitute who came to Kauai because she had "bad blood" and wanted to take the "quick treatment." She gave a history of having a negative Wassermann in June but had had a skin eruption later which was no longer present. Wassermann and Kahn were positive. Patient entered hospital October 8 and was discharged October 13, 1941. This patient returned immediately to Honolulu and many attempts to locate her have failed.

TECHNIQUE

The technique used for this treatment was almost identical to that described by Hyman and his co-workers.[1]

Mapharsen .04 grams was dissolved in 250 cc. of 5% glucose in distilled water. Five such doses were given continuously over a period of eight to ten hours. It was regulated so that it would require at least eight hours for the total dose to flow into the vein. The arm was restrained in order to keep the patient from moving should he or she fall asleep. The needle was taped well, to keep it from slipping forward or out of the vein. It was found that veins in the forearm were the most satisfactory. All patients received a minimum of 1,000 mgm., and one man received 1,200 mgm., of Mapharsen.

Daily urinalyses were done and daily blood counts taken. Temperatures were taken every two hours and constant watch made. No other special precautions were taken. Patients were encouraged to eat a regular hospital "house diet" Bowels were made to move each day, by enema, if necessary. Patients were allowed and encouraged to get out of bed following treatment each day.

COMPLICATIONS

Painful arms and second-day elevations of temperature occurred in every case.

Very little change was noted in blood picture or urinalysis. One patient (Case 1) was readmitted with a marked dermatitis lasting forty-eight hours, two days after discharge.

Almost every case complained of pain in the arm, particularly in the upper arm. There was one case in which the needle pulled out of the vein and a very painful swelling resulted at the site of the subcutaneous injection; however, there was no serious effect and the lesion cleared quickly under hot wet fomentations.

One case developed a thrombophlebitis which lasted four or five days after discharge from hospital.

Statistical analysis of nine cases receiving massive dose arsenotherapy of syphilis

CASE	SEX	AGE	RACE	SYPHILIS	LABORATORY	GRAMS OF MAPHARSEN	REACTIONS	RESULTS
1	F	22	Japanese	Early latent	Pos. serology	1.0	99.6° 2 days. Severe pain in arm. Dermatitis 2nd & 3rd days. Abdominal cramps.	W & K neg. 2 wks. & 14 wks. but pos. Jan. 1942
2	F	24	Japanese	Secondary	Pos. serology	1.0	99.6° 4th day, 102° 6th day. Severe pain in arm. Nausea & vomiting.	W & K neg. 13 wks. Neg. Jan 1942
3	F	19	Korean	Secondary?	Pos. serology	1.0	101.8° 2nd day, 100° each day. Pain in arm. Dermatitis disappeared. Nauseated; developed albuminuria with casts. Not very coöp.	W & K neg. 9 wks. Pos. May 1942
4	M	36	Portuguese	Primary	Pos. serology Pos. darkfield	1.2	100-100.8° every day for treatment. No particular discomfort in arm. No dermatitis. Developed thrombophlebitis of right arm last day.	Chancre healed quickly. Neg. serology May 1942
5	M	30	Filipino	Primary?	Pos. serology Neg. darkfield	1.0	101° highest, 2nd day. Slight pain in arm. No dermatitis. No complication.	Chancre healed quickly. Neg. serology May 1942
6	M	33	Filipino	Primary	Neg. serology Pos. darkfield	1.1	100° 5th day. Some pain in arm. No dermatitis. Phlebitis of left arm.	W & K neg. 2 months later. Final result — Pt. left Kauai
7	M	33	Filipino	Primary	Neg. serology Pos. darkfield	1.0	99.4° 5th day. No pain in arm. No dermatitis. No complications.	W & K never pos. Chancre healed quickly. Pt. left Kauai after treat.
8	M	50	Filipino	Primary	Pos. darkfield Neg. serology	1.0	99.4° highest, 4th day. No pain in arm. No dermatitis. No complication.	W & K never pos. Chancre healed quickly. W & K still neg. May 1942
9	F	21	Part Hawaiian	Secondary?	Pos. serology Slight dermatitis	1.0	99.2° highest temp. Slight pain in arm. Dermatitis cleared. No complication.	No record obtained; returned to Honolulu. No follow-up.

COMMENT

The literature on the massive dose therapy of early syphilis is being added to more and more frequently. Already variations of the first methods are appearing. H. Gorden[4] says "Early syphilis in 84 patients was treated by the intravenous administration of Mapharsen, 20 mg. every two hours, five times daily for five days; results were good."

Herbert Rattner[5] reports, "The most significant new development in the treatment of syphilis has been the introduction of the so-called five day massive dose therapy for early cases."

Five deaths have occurred in one series of 1600 cases. These deaths were presumably from toxic encephalitis.

It can be seen that this type of treatment is not without danger. However, in closing, without trying to draw any conclusions from these few cases, it does seem that from a public health standpoint, this type of therapy has something to offer the *early* case of syphilis that no other form of trea ment so far has offered.

Another point which must borne in mind is the false sense of security which may develop in minds of both doctor and patient. Anyone using this type of treatment should make it a point to check the patient for syphilitic manifestations as well as blood serology at frequent intervals. Undoubtedly this type of treatment will continue to be used more and more each year. As more cases are reported more will be known of the results of this type of treatment and sooner or later unquestionably the massive dose arsenotherapy started by Hyman—or some modification of it—will have a very definite place in the treatment of early syphilis.

DISCUSSION

DR. HARRY L. ARNOLD, JR.: Dr. Wallis has kindly asked me to comment on his paper from the syphilological standpoint, though he said he feared I might agree with his opening paragraph.

The standard modern treatment of syphilis is admittedly unsatisfactory, chiefly because it is so time-consuming that few patients, as Dr. Wallis points out, can be compelled to submit to a full course of treatment. The modern treatment of syphilis as it is carried out by the average general practitioner is even less satisfactory.

The five-day plan does away with many of these disadvantages. It is easily adhered to, so that uniformity of treatment is readily achieved; it renders early active cases non-infectious immediately (and probably usually, though perhaps not always, permanently); it is comparatively inexpensive; and it is all done with "in one fell swoop," thus eliminating treatment-lapses.

But even accepting at their face value (as many of the foremost syphilologists, notably U. J. Wile, have done) all the reports of the efficacy, and seeming permanence of the results, of this treatment method, we must not forget that the five day plan offers one more thing. It offers roughly one chance in a hundred of hemorrhagic encephalitis, and one chance in three to five hundred of death. *Is your patient willing (and qualified), and are you able, to absorb that relatively huge element of risk?* Always remembering, of course, that while "cure" by the older method demands the patient's regular return for treatments for a year or two, the risk of *death* by that method is more than a hundred times less.

This is the decision that must be made. If you and your patient face it and make it, more power to you: but if you merely ignore it, you are indeed "where angels fear to tread!"

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The Diphtheria Problem in Waimea District

K. M. Amlin, M.D.

Waimea, Kauai

A survey reveals that 15 cases of diphtheria were admitted to Waimea Hospital in the years 1939-1941. Every case diagnosed was admitted to the hospital, even though asymptomatic, and held until two consecutive throat cultures were negative for diphtheria bacilli. All contacts of the patients' families were examined and throat cultures taken. In one family the mother and two siblings were found to be carriers and were hospitalized. In 8 of the 15 cases greyish membranes were found on the tonsils. Five of the cases were definitely asymptomatic carriers. There were no deaths and very little morbidity among these cases.

This seems to be a high incidence of diphtheria for a small community which otherwise has a good health record. In fact, one wonders why we have diphtheria at all. We have no small pox; and diphtheria, like smallpox, can be prevented. Territorial law demands that children be immunized against smallpox and diphtheria before entering school. The important years are not just before entering school, but the first two years of life. The child receives immunity from the mother which lasts until it is about eight months old. The Board of Health requests the parents to begin having the child immunized at the age of eight months.

Diphtheria is a vanishing disease in communities where the active immunization of pre-school children is practiced. However, carriers of virulent diphtheria bacilli are found from the arctic to the tropics. They average 6 per cent of the population the world over. Infection with diphtheria bacilli is just as prevalent in the tropics and warm countries as in the temperate zone. The disease is, however, much less common in warm countries and also much milder. These cases confirm that statement.

Disappearance of bacilli from nose and throat cannot be hastened by the giving of antitoxin. The accompanying table shows that these cases were given antitoxin ranging from a low dosage of 1000 units in the carrier cases to 20,000, 30,000, and even 40,000 units in one moderate diphtheria case. The number of hospital days for each patient varied between a low of five days and a high of forty-three days. No cases were discharged until two consecutive negative cultures had been obtained. One case was repeatedly positive with no symptoms or complaints. This child was subjected to tonsillectomy, and one week later negative cultures were obtained. The average hospital stay for these patients was about ten days.

Rosenau states that the diphtheria bacilli usually disappear in about 50 per cent of cases by the time the local membrane has disappeared and that 1 per cent continue as chronic carriers. The virulence of the diphtheria bacilli is not lessened by the development of the carrier state. In all of our cases the bacilli disappeared from nose and throat several days or even weeks after the membrane had disappeared.

Cases of streptococcal tonsillitis with follicular patches resembling false membrane may occur in diphtheria carriers. The laboratory report in two cases showed streptococci and pneumococci as well as diphtheria bacilli. In one case, sulfapyridine was given; in the other, sulfathiazole. In both cases the membrane disappeared rapidly. Sulfathiazole was given to 5 other patients with greyish membranes on their tonsils before the laboratory reports were returned. The membrane in all these cases cleared rapidly. The use of sulfathiazole did not seem to affect the disappearance time of the diphtheria bacilli from the throat.

Up to 1940 the infants in this community were given one injection of diphtheria toxoid (alum precipitated). At that time, the two-injection technique was started because too many cases of diphtheria and too many diphtheria carriers were found. No carriers of diphtheria have been seen in the first five months of 1942.

In 1941, Dr. B. O. Wade, senior surgeon at Waimea Hospital, suggested and started a program of Schick testing all pre-school children on Kekaha plantation to find out whether our single and double dose toxoid injections were actually immunizing the children. All Schick tests were read on the fifth day. Schick tests were done on 70 children at least three months after they had received two doses of alum-precipitated toxoid; 3, or 4.3 per cent, were positive. Schick tests on 150 children who had

had one dose of alum precipitated toxoid showed that 30 of them, or 20 per cent, were positive.

The immunization records of the 15 cases under discussion showed that 8 had had one injection of toxoid, 2 had had two injections of toxoid, and 1 had had three injections of toxin-antitoxin; the remaining 4 cases had no record of immunization. The ideal system is to give two toxoid injections starting at eight months of age, followed by a Schick test three to six months later to pick up the few in need of further immunization.

CONCLUSIONS

1. Diphtheria in Hawaii is a mild disease.
2. Diphtheria can be prevented by proper immunization of infants; however, diphtheria carriers may still be found among those immunized.
3. All children with suspicious membranes in pharynx or nose should be given sulfathiazole or sulfadiazine and diphtheria antitoxin immediately without waiting for laboratory diagnosis, unless the Schick test is known to be negative, in which case the sulfa drug should be given alone.

Analysis of Diphtheria Cases and Carriers, Waimea District, Kauai, 1939 - 1941

CASE	AGE	UNITS OF ANTITOXIN GIVEN	DAYS IN HOSPITAL	SEVERITY	PREVIOUS ACTIVE IMMUNIZATION	SYMPTOMS AND SIGNS
1	2	5,000	30	Carrier	2 toxoid	none
2	35	1,000	5	"	none	"
3	10	1,000	7	"	3 doses toxin-antitoxin	"
4	15	1,000	7	"	1 toxoid	"
5	4	5,000	9	mild disease	"	sore throat
6	18	20,000	6	mild	"	membrane rt. tonsil
7	10	10,000	13	"	"	red pharynx
8	5	20,000	6	"	2 toxoid	membrane lt. tonsil
9	5	20,000	8	moderate	no record	membrane both tonsils
10	2	10,000	10	mild	1 toxoid	"
11	10	5,000	12	"	none	greyish membrane both tonsils
12	3	40,000	10	moderate	toxoid	red throat
13	8	30,000	40	"	"	membrane both tonsils
14	15	10,000	11	mild	no record	"
15	4½	10,000	9	"	toxoid	membrane left tonsil

Regional Anesthesia

Experiences in Ten Years of General Practice

Marvin A. Brennecke, M.D.

Eleele, Kauai

Local and regional anesthesia are not used as much as they deserve to be, either alone or in combination with a general anesthesia. Regional anesthesia should be studied thoroughly, especially by those who may have to attend war casualties. It is the most nearly ideal anesthetic for the patient, the doctor, and the nurse. It minimizes shock in the patient; it enables him to cooperate with the doctor during surgery, and with the nurse while being transported from operating room to x-ray room or to bed; and it permits him to assist in his own immediate post-operative care.

Local and regional anesthesia are two distinct entities. Local anesthesia—infiltration of an anesthetic solution locally into the tissues to be cut—is so simple that it requires no training; the use of regional anesthesia, however, requires a review of anatomy and knowledge of a clearly defined technique.

An excellent presentation of the subject may be found in Labat's classical work[1]. I have found it advisable, however, to modify a few of the techniques described here. One of these is the preparation of procaine solution by adding procaine tablets out of a stock bottle to sterile normal saline immediately before it is used[2] instead of sterilizing the procaine solution itself. Heat always causes some degree of deterioration of the drug, reports to the contrary notwithstanding, and this method insures full potency of the solution. Since improper technique and deterioration of the anesthetic solution are the only two reasons for an unsatisfactory anesthesia, the elimination of one of these permits a definite check on the other. No infections have been observed from this method in the past five years, in either minor or major surgery.

Cranial Nerve Blocks

Trigeminal or Gasserian ganglion block is indicated for extensive traumatic surgery or other operations on the face. It is not as difficult to do as it appears, and gives excellent anesthesia of the entire side of the face.

Maxillary block is done by the zygomatic, orbital, or oral route. Only the first route has been used by me. It is easy to do if one keeps in mind the relationship of the sphenomaxillary fossa to the pterygoid process.

The mandibular nerve may be blocked either by an extra-oral or oral route. The former has two approaches. Only the zygomatic route has been used in my practice. It is not difficult after a study of the relationship of the foramen ovale to the pterygoid process.

Paravertebral Block

Paravertebral cervical block by the lateral route can be performed accurately with excellent anesthesia of the entire neck. In thyroidectomy it has definite advantages over local infiltration. There is no distortion of tissues, the patient has less discomfort, and the dissection is not interrupted by repeated injections of the anesthetic.

Paravertebral dorsal and lumbar blocks do not give as high a percentage of complete anesthesia as desired. These blocks are the most difficult of all to do, and they should not be attempted in an obese individual. The large amount of adipose tissue around the nerve segments makes accurate deposition of the solution very difficult. However, when the anesthesia is satisfactory, it is better than a spinal anesthesia for a specific operation in the abdomen when exploration is not necessary. In cholecystectomies the patient may be changed to any position without influencing the blood pressure or pulse. A semi-sitting position, which this anesthetic permits, gives an excellent exposure of the biliary tract and duodenum. In herniotomies and appendectomies it excels local infiltration, field block, or spinal anesthesia. In a recent case of traumatic rupture of the spleen a paravertebral dorsal block supplemented by ether would have been much better than an abdominal field block whereby the posterior parietal peritoneum and lower ribs were not anesthetized. A spinal anesthetic was not used in this case because the patient did not improve preoperatively from shock.

CAUDAL BLOCK

Caudal block is the most satisfactory anesthesia for cystoscopy in the male and in the adolescent female. In the male it relaxes the bladder sphincters so that no trauma of the deep urethra is produced, and in the adolescent female the anesthesia produced in the external genitalia is desirable. A twenty gauge two-inch needle is more easily inserted into the sacral hiatus than the long spinal puncture needle suggested by Labat. The shorter needle gives better tactile sensation to the fingers and the deposition of the fluid just past the sacrococcygeal membrane gives as good an anesthesia as the deposition of the fluid two inches above the membrane.

Transsacral plus caudal block gives an excellent anesthesia for hemorrhoidectomies. Though more difficult and time-consuming than a low spinal anesthetic it is to be preferred. The prolonged anesthesia post-operatively and the absolute freedom from spinal reactions warrant its use.

BLOCKING THE EXTREMITIES

Brachial plexus block for trauma of the upper extremity is the most nearly ideal of any anesthesia, local or general. The patient is able to cooperate in the application of casts or in the taking of x-rays; the period of anesthesia permits unhurried operative procedures; and the patient improves from shock as soon as the anesthesia is established. The supraclavicular route is the best method of approach.

Blocking of the ulnar and median nerves at the wrist with subcutaneous infiltration, bracelet fashion, gives excellent anesthesia of the hand. Similarly, anterior and posterior tibial block, with a subcutaneous ring of infiltration at the ankle, gives excellent anesthesia of the foot.

Blocking of the peripheral nerves at the elbow or knee have not been used enough to warrant an opinion of their value.

AUTONOMIC BLOCKS

Splanchnic anesthesia may be done by either the anterior or posterior route. By using the posterior route according to Kappis' technique and doing a field block of the abdomen, the upper abdominal viscera are rendered insensitive by the time the abdomen is opened. If the anterior route by Braun's technique is used, extreme gentleness in the retraction of the liver and stomach are necessary to prevent the abdominal contents from bulging out while the needle is being placed in the region of the first lumbar vertebra between the aorta and the vena cava. The latter approach for subtotal gastrectomies has given better results in some cases than spinal anesthesia with nupercaine or pontocaine. High spinal anesthesia occasionally fails to give proper relaxation for partial gastrectomy, and in these cases a supplementary anterior splanchnic block is ideal.

CONCLUSIONS

1. Regional anesthesia is not difficult when a definite technique is followed.

2. Regional anesthesia is one of the best anesthesias in either traumatic or non-traumatic surgery.

3. Experiences with regional blocks as described in a classical work are presented.

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EDITORIALS

PRIVATE PRACTITIONER PREFERRED

The Gallup poll a few years ago attempted to determine the attitude of the American people toward a form of state-controlled medicine, generally spoken of as "socialized medicine".

The question propounded was, in brief, whether a scheme offering full medical care in return for a nominal monthly fee per individual would meet with approbation.

To us, this seemed like asking whether one would say "Yes" if offered a ten dollar bill in exchange for fifty cents.

The answers to Dr. Gallup's question were, to no one's great surprise, overwhelmingly in the affirmative.

The people of Honolulu have recently been asked a question pertaining to the same subject; and their answers would appear to shed some light on how the rank and file may be expected to react when given a choice between securing a service from a private physician for a fee, or receiving the same service from the government for nothing.

The Military Governor of Hawaii ordered that all residents—young, old, rich and poor—submit to vaccination against smallpox, typhoid and paratyphoid fevers. The order was first applied to rural portion of the Island of Oahu, and the immunizations were done by teams of physicians from the Territorial Board of Health and the Army.

Then the order was applied to the City of Honolulu and here the choice was given for immunization by private physician for a fee, or by government physician gratis. It was announced through the public press that the government-given immunization would start on a certain date and would be administered in the first-aid stations with which the populace had become acquainted as enumeration centers and centers for distribution of gasoline ration tickets.

Before that date, those who desired would be permitted to secure the three typhoid-paratyphoid inoculations and the smallpox vaccination from their private physicians for a fee which the physicians fixed at $1.00 per treatment or $4.00 for the immunization series.

Here was a clear-cut proposition involving comparable services by private physicians and government agency. If the person to be vaccinated selected the former it was with the knowledge that his choice committed him to digging down in the jeans for four round dollars. If he elected to receive the same service —which, be it noted, he had not asked for but was ordered to receive from the government —the cost to him would be nothing.

Here is how he decided:

In Honolulu 201,945 persons were immunized. Of this number 89,048, or 44%, elected to receive the service from the government at no cost to them. A total of 112,897, or 56%, elected to pay for this service which they could have received gratis.

How may these results be interpreted?

Are they in fact the popular indorsement of the private practice of medicine—of the old fashioned patient-doctor relationship—they appear to be?

Do they mean, as it would appear, that 56%

of a group of over 200,000 people, the residents of a more or less average American city, voted against an application of state-controlled, or socialized medicine, and paid $4.00 apiece for the privilege?

Let us examine this more closely:

Was the choice expressed spontaneous and voluntary or were those to be vaccinated high-pressured into private doctors' offices? The public was notified of the immunization requirement by order of the Military Governor, and in the order it was stated that the immunization could be secured either from private physicians or at the aid stations. There was no advertising or other effort on the part of private physicians to secure patronage.

Were the services identical? Insofar as those to be vaccinated knew, the answer is "Yes." It is true that most private physicians in their offices used the intradermal technique for the typhoid-paratyphoid inoculations, but this was not publicized and could have no effect on the determination of choice.

In short, the decision was John Q. Public's own,—but certain significant factors in aiding him to decide must be recognized.

First, the fee fixed by the physicians was reasonable. At least John Q. appeared to have sized it up and decided it was.

Second, John Q. had the money to pay the fee and this without depriving himself and his family of any essential, for in Honolulu now there is employment and good wages for everyone due to the tremendous war effort underway.

Can any definite conclusion be drawn from Honolulu's experience with the immunization program?

How about this:

When John Q. Public has a job and is making an adequate wage, and when the cost of medical services is within his reach, he prefers to buy such care from a physician of his own choosing, and to pay the bill himself.

He would prefer to do this even though the government offers him the same services and says, "Keep your money. Let the taxpayer foot the bill."

L. C. P.

THE BLACKOUT AND HEALTH

Interpreting statistics of disease incidence in terms of any single factor which affects the lives and habits of the general public is always, needless to say, a risky procedure. In the case of the blackout, however, the temptation to look for such a correlation is all but irresistible.

The blackout has been irksome. It has made restaurants close when their morning employees end their eight-hour shift—for an extra shift to work only three or four hours is not practical in many instances. It has closed theaters by seven, and thereby has closed them throughout the week to workers whose shift ends at five or six o'clock, and completely to the many workers whose week lasts seven days. It has closed bars completely to all except the night-shift men. Together with the curfew, it has kept many people from enjoying one another's society after the daylight hours. It has prevented evening use of libraries. It has been hard on many businesses, as well as on their potential customers. It has worked some degree of hardship on almost every person in the Territory, and as the warmer summer weather approaches it seems likely that it will become even less pleasant than it has been. *But it **doesn't** promote ill health*—or at any rate, no increase of illness has occurred since the blackout went into effect, notwithstanding the serious overcrowding of nearly all public facilities that has occurred during this period as a result of the rapid increase of population.

	HONOLULU		TERRITORIAL		TOTAL PERCENT DIFF.
	1941	1942	1941	1942	
Diphtheria	26	18	55	33	— 40
GC	505	407	637	482	— 24
Influenza	89	1	1,967	232	*
Leprosy	6	6	17	9	†
Measles	1,436	40	2,641	464	*
G. Measles	128	27	779	104	*
Mumps	31	18	78	117	+ 50
Whooping Cough	37	173	108	278	+ 157
Pneumonia Lobar	32	154	103	205	+ 100
Syphilis	202	46	466	404	— 13
Tetanus	2	4	11	13	†
Pulm. Tbc.	203	42	380	345	— 9
Typhoid	8	79	29	93	‡
Varicella	215	67	726	275	— 62
Total	2,985	1,451	8,369	3,145	— 62

* Epidemic 1940-41
† Percentage not significant
‡ Epidemic, 77 cases, 1942.

Indeed the incidence of contagious diseases during the first five months of 1942 has been materially lower than during the first five months of 1941, with only these exceptions: typhoid fever (of which an epidemic occurred in March 1942), pneumococcus pneumonia, and pertussis. The accompanying chart, condensed from figures supplied by Dr. James Enright of the Bureau of Communicable Diseases of the Territorial Board of Health, shows the details of the comparison between the two periods of time mentioned.

Why pneumonia has increased is not definitely known. Possibly the increase is attributable in part to the recent importation of fresh strains of the organism from the Mainland. Possibly overcrowding of defense workers in the limited housing facilities available for them has been a contributing factor.

But in general it is plain that the blackout cannot be blamed for causing an increase in the incidence of communicable diseases since December 7—for actually a considerable decrease of their incidence has taken place.

It will be interesting to observe what the warmer and more humid weather of the summer and fall months brings.

H. L. A., JR.

SEEING IN THE BLACKOUT

Illumination is a factor of primary importance in the performance of our daily tasks. The ability to see in the dark varies from one individual to another. The minimum amount of illumination necessary for clear seeing cannot be stated in definite figures because it depends on the eye and on the task. From the standpoint of the eye, the size of the pupil, the condition of the crystalline lens, the nutrition of the individual with regard to vitamin A, and the integrity of the retina are the principal variables. From the standpoint of the object viewed, its size, its contrast with the surroundings, its brightness, its color, and the duration of the image on the retina are the prime factors affecting visibility.

The eye is able to adapt itself to extreme degrees of lighting, ranging from summer sunlight to faint starlight, a scale of about one hundred million to one. If a person goes from a brightly illuminated room into a dark one, he sees nothing at first. After a short time he becomes attuned to the darkness and is able to find his way about —his eyes have become *dark adapted* or *scotopic*. If he then returns to the brightly lit room, he is dazzled and is unable to see clearly. Gradually his eyes become reaccustomed to the light—they have become *light adapted* or *photopic*.

In blackout lighting we are hardly able to distinguish objects one from another. Central visual acuity drops to about one-sixtieth of its value as determined under optimal conditions of illumination. This is due to the low contrasts which prevail between objects and their surroundings at low levels of brightness.

As the illumination is diminished, colors manifest a change in their characteristics. Red and orange hues become darker, blue and green hues become brighter. This lack of sensitivity for red in scotopic vision is called Purkinje's phenomenon.

Much confusion exists with regard to the best color of light for blackout lighting. The general impression is that blue shades are superior to other shades. The only advantage of blue covering around an ordinary incandescent lamp is the fact that a very dim light results, which is of course desirable. Blue as a color however is undesirable because it appears brighter in low levels of brightness than other colors even though they all appeared equal at a higher level of brightness. Blue can be seen by peripheral vision over a greater extent of the visual field than any other light or surface of the same brightness. Hence, it can be picked up easier by an enemy aerial observer whose eyes are roving over the entire field below him.

Reddish light has the advantage of greater sharpness of seeing, more rapid dark adaptation and less interference with peripheral vision which a dark adapted observer obtains from such sources as moonlight or starlight. A dimly lighted red area cannot be detected by an aerial observer unless his line of sight happens to pass within a degree or two of it.

In time of war, many of us may have to perform duties during blackout hours. For the sake of our lives and those of others, it is important that we acquaint ourselves with our own capabilities and limitations for seeing in the dark.

W. JOHN HOLMES, M.D.

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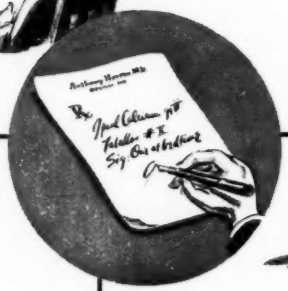

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PROGRESS IN INTERNAL MEDICINE

CLINICAL USES OF THE SULFONAMIDES

Each new member of the sulfonamide group of drugs calls forth a number of articles on its experimental aspects and clinical applications. The total of this literature soon becomes overwhelming in volume and discouraging to the average physician. Yet it is imperative for him to keep up on the subject. Next to the war, it is the most important subject of the decade. The sulfonamides may save as many lives as the united war effort will destroy.

Of the many aspects of sulfonamide therapy, two questions are selected for discussion at this time:

1. What considerations shall influence our choice of drug in the treatment of a given case?

2. What are the reasons for failure in certain cases where the drug is administered carefully according to the usual rules?

Choice of a Sulfonamide

How shall we select the proper member of the sulfonamide series for use in a given case? The principal considerations are (1) the specificity of the drug, (2) its distribution and concentration in the blood and body tissues, and (3) its toxicity. These points are to be evaluated in relationship to the severity of the infection and the patient's general condition (age, other complicating diseases, etc.). The first three points will be considered briefly in relation to the five outstanding members of the group: sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine and sulfaguanidine.

SULFANILAMIDE, the first member of the series, discovered in 1935, was proclaimed as a cure of puerperal sepsis. Clinical reports have repeatedly confirmed the experimental evidence of its efficacy against infection by members of the streptococcus hemolyticus group of organisms. It has likewise been shown to be clinically efficient in the treatment of chancroid, gonorrheal arthritis, ophthalmia neonatorum, lymphogranuloma venereum, trachoma, and meningococcus and pneumococcus meningitis. It is quickly absorbed, so that high blood levels and other body fluid levels are easily obtained by oral administration unless vomiting is a complication. Sulfanilamide powder is probably the drug of choice in local application to surface and cavity wounds where infection is present or suspected (ruptured viscus, war wounds, etc.). The chief objections to this drug are its toxic reactions. General symptoms, cyanosis, and dizziness with depression are outstanding. Vomiting is frequent. Serious blood dyscrasias and skin eruptions also occur.

SULFAPYRIDINE was heralded as a cure for pneumococcus pneumonia. It is unquestionably of value in all types of pneumococcus infection. It is also effective in Friedländer's bacillus pneumonia and is more effective than sulfanilamide against the gonococcus and meningococcus. It is somewhat slowly absorbed but is slowly excreted and relatively high blood levels are readily obtained by mouth administration, provided vomiting is not a complication. The sodium salt is available for intravenous administration. It is relatively highly toxic, producing a high incidence of serious vomiting and not infrequently hematuria and occasional "crystal" anuria.

SULFATHIAZOLE is more effective than either sulfanilamide or sulfapyridine in the treatment of staphylococcic infections. It has approximately the same effectiveness as sulfapyridine against the pneumococcus. It is rapidly absorbed and rapidly excreted and high blood levels are difficult to maintain. It is relatively poorly diffused into meninges, pleura and peritoneum. It is more useful than other members of the group in gonorrheal infections in the male, and in most genito-urinary tract infections. It is perhaps the drug of choice in staphylococcic infections. It is also useful in bacillus coli infections and in infections by certain members of the enteritis group. It is more commonly used in pneumonia and in many other conditions because toxic reactions are less severe. It causes much less nausea and vomiting but may cause renal complications (hematuria and anuria) and, not infrequently, skin eruptions.

SULFADIAZINE, the most recently developed member of the group, is apparently the most generally useful and is certainly the least toxic

of the series. It is reported to be effective against bacillus coli, Friedländer's bacillus, the meningococci, pneumococci, beta hemolytic streptococci, and staphylococci. Its absorption is somewhat slower than sulfathiazole but its excretion is slower and there is little acetylization of the drug, so that high blood levels are readily maintained. It is diffused readily into the serous sacs and meninges. Toxic effects are relatively infrequent but general depression, nausea and vomiting, mild fine skin eruptions, etc., do occur with this drug. The greatest objection to its use is its present high cost.

SULFAGUANIDINE has a limited field of usefulness. It is poorly absorbed and rather high concentrations of the drug are found throughout the intestinal tract after mouth administration. For this reason it has been advocated in intestinal tract infection, in operations involving the bowel and in chronic ulcerative colitis. In this last use it has proved disappointing. Its principal use is in bacillary dysentery.

It is noteworthy that none of the drugs so far discovered have proven useful against any of the common infectious diseases caused by the viruses or by the rickettsia. Their only use in these diseases is as a prophylaxis against, or in the treatment of, complications caused by the organisms which are susceptible to the sulfa drugs.

Explanation of Failures

What are the reasons for failure in chemotherapy with the sulfonamides? This question is answered in a recent article by Bullowa and others (Bullowa, J. G. M.; Schackman, N. H., and Stats, D.: Chemotherapy of Pneumonias and Immunity Reactions, *Ann. Int. Med.* 16:57 [Jan.] 1942), in relationship to pneumonia. The principles apply equally well to other infections. They are briefly as follows:

1. *Wrong diagnosis.* The infection may be due to an organism not affected by the sulfonamides, or the drug selected may not be sufficiently specific for the organism. One should always seek to discover the etiologic agent at the onset. A change to another member of the series may accomplish results. In cases where the etiologic agent is in doubt, if specific drug administration in sufficient dosage is not accomplishing any clinical improvement within forty-eight to seventy-two hours, it may be wise to stop this form of therapy.

2. *Ineffective concentration.* This may be due to insufficient dosage, poor absorption, conversion (acetylization), rapid excretion or insufficient tissue-penetration. Determination of blood levels of the drug, and perhaps spinal fluid or pleural fluid levels, are indicated when this question arises. Intravenous administration may be necessary to obtain adequate levels in serious infections.

3. *Too many organisms.* If the disease is treated late, or in the case of overwhelming infection, the organisms may be killed or attenuated too slowly to save the patient. Prompt institution of heroic doses of the drug by all routes is indicated under these conditions.

4. *The organisms may become "fast."* This is not frequent but it does occur and much higher concentrations of the drugs than are usually employed may be required.

5. *Antisulfonamide substances; pus.* Pus, serum and other exudates may contain antisulfonamide substances which make chemotherapy ineffective. The large numbers of organisms present in collections of pus make therapy more difficult. The principle of early surgical drainage of abscesses and empyema should always be adhered to lest immunity response and protection become exhausted. In conjunction with drainage and internal administration of the drug, local application or lavage may assist in expediting cure.

6. *Toxic action.* Severe toxic phenomena due to the drug itself may preclude the administration in sufficient dosage or over sufficient period of time to accomplish results. A change to another member of the series may be possible if the toxic effects do not involve such vital organs as bone marrow, liver, etc.

7. *Failure of immunity response.* There may be, in certain patients, a failure of immunity response so that organisms that have not been killed may again become active. Complete studies of the organism and of the patient's immunity response may be required in this instance. Specific antiserum may be required in addition to chemotherapy.

Summary

In order to accomplish maximum benefit in sulfonamide therapy it is well to know accurately the specific etiological agent with which we are dealing and the full extent of the disease process. Knowing this we should promptly institute the specific drug in full therapeutic dosage and so anticipate only rare consideration of the problems listed above.

S. E. DOOLITTLE, M.D.

RECENT ADVANCES IN SURGERY

VITAMINS IN RELATION TO SURGICAL PRACTICE

A recent review by Paul Starr of Northwestern University Medical School (Starr, P.: The Value of Vitamins in Surgical Practice, *Internat. Abstr. Surg.* 75:309, 1941; in *Surg., Gynec. & Obst.* [April] 1942) considers in detail the various vitamins in relation to surgery. Some of the more important aspects of this problem are summarized herewith.

A most important reorientation in regard to the vitamins is in process. Many still think of them as substances necessary for the prevention of such bizarre diseases as beriberi, pellagra, scurvy, and rickets. Actually they are necessary for normal biological processes; they are required in certain quantities; and deficiency may manifest itself by serious changes in function before changes that produce the clinical pictures of these deficiency diseases take place. There are three orders of magnitude of vitamin requirement; namely, (1) the amount needed for normal processes under normal conditions, (2) the amount needed to maintain normal processes during critical emergencies, and (3) the amount needed to reverse pathological organic changes resulting from deficiency. The surgeon is concerned chiefly with the second of these three.

The Clinical Diagnosis of Avitaminosis

Indications of latent or "subclinical" avitaminosis must be derived chiefly from a history of (1) *inadequate intake,* which may be due to ignorance, poverty, anorexia, special restricted therapeutic diets, or alcoholism; (2) *inadequate absorption,* which may be due to persistent vomiting, ileitis, ulcerative colitis, postoperative short-circuiting of the gastrointestinal tract, repeated or continuous aspiration of the gastrointestinal contents; and finally (3) *increased requirements,* as in fever, hyperthyroidism, pregnancy, administration of intravenous glucose, or alcoholism.

Vitamin A

Vitamin A deficiency, unless advanced and severe, is of no practical importance to the surgeon.

Vitamin B

The vitamin B factors are known chemical substances of which the structure has been determined. They are respiratory enzymes required in normal physiology. Beriberi and pellagra are the end-results of prolonged deficiency from which pathological changes have had time to occur. A sudden increase in the rate of oxidation of carbohydrates such as would occur in a thyroid crisis, a febrile reaction, or an operation, will create a deficiency in vitamin B with acute disturbance of the oxidation processes. The three components of vitamin B known to be respiratory enzymes are thiamin, riboflavin, and niacin (nicotinic acid).

Sydenstricker says that in his experience "every instance of 'waterlogging' occurring in surgical patients receiving intravenous dextrose solution, with or without saline, associated with tachycardia, neuritic pain or tenderness of the extremities, has shown prompt diuresis and relief of pain and tenderness as well as slowing of the heart when adequate doses of thiamin were given. . . .

"The combination of mental confusion or actual delirium and glossitis and stomatitis is seen in patients with complicated surgical conditions who are maintained for considerable periods by *parenteral administration of dextrose* and physiologic saline solutions. All types of obstructive lesions of the gastrointestinal tract, acute cholecystitis, operations upon the stomach or bowel, all varieties of suppurative peritonitis and extensive infected wounds furnish examples of this syndrome. It is seen very often too after emergency operations for urinary obstruction due to prostatism. The factors which seem to be contributory to avitaminosis in these groups are fever, vomiting and the administration of large amounts of dextrose. Fever causes hypermetabolism with increased energy requirements; vomiting prevents the absorption of vitamins from any normal foodstuffs which may be taken. Glucose maintenance, though the only available method of alimentation in many instances, increases the utilization of coenzymes without furnishing any replacement."

In commenting on therapeutic measures Sydenstricker says: "It is probably always wise to add nicotinic acid or sodium nicotinate to dextrose solutions when they are to be used for the prolonged hydration or nourishment of patients unable to swallow or retain food or fluids.

"The amount of nicotinic acid required for the satisfactory treatment of the whole group of acute deficiencies is large. It has been our custom to give at least 600 mgm. daily by mouth or through an indwelling stomach tube and 300 to 400 mgm. by intramuscular or intravenous injection."

Vitamin C

Recent work by Lanman and Ingalls has shown that the presence of scurvy in guinea pigs interferes with wound healing, and suggested that a vitamin C deficiency might be of importance in clinical surgery.

Wolfer states "The deficient patient should receive 1 gm. of cevitamic acid daily for ten days before any surgical procedure is attempted and this should be continued until wound healing is complete."

A most important direct human experiment on wound healing was carried out by Crandon, Lund, and Dill. One of them placed himself on a diet containing no vitamin C for six months. All other known vitamin factors were provided. An incision through the skin of the back was made after three months. This wound healed normally. A similar wound was made after six months on the diet. This failed to heal normally; biopsy of the wound showed that the tissues at this time lacked intercellular substance. Parenteral vitamin C was then given with good healing, and after ten days a biopsy showed considerable intercellular substance. The great length of time elapsing in this case before vitamin C deficiency produced failure of wound healing may be explained by the maintenance of tissue health and by the adequacy of the other nutritional elements. More important than the eventual production of wound separation was the positive evidence of the immediate production of wound healing by the restoration of vitamin C and the microscopic demonstration of intercellular material coincident with vitamin C administration.

Vitamin D

Vitamin D is of no practical importance in surgery except where calcium metabolism is specifically altered by the operation or the disease. We need not consider it here.

Vitamin K

Vitamin K has proved to be a specific substance preventing hemorrhage. Green leafy plant tissue, such as dried alfalfa, is its richest natural source. The clinical application of vitamin K began following the demonstration of low prothrombin levels in certain cases of obstructive jaundice by Quick, Stanley-Brown, and Bancroft. Recently highly water-soluble synthetic substitutes have been given intravenously, and some of these synthetic materials appear to be absorbed directly from the intestine independently of bile.

In addition to the hemorrhagic state associated with obstructive jaundice, other hemorrhagic states, such as hemorrhagic disease of the newborn, that associated with extensive liver damage, and that occasionally occurring in nontropical sprue and ulcerative colitis, have been treated with vitamin K. The clotting defect in hemophilia does not involve prothrombin deficiency, hence it does not respond to vitamin K administration.

Little is known about the manner in which vitamin K promotes the formation of prothrombin. This function is carried out in the liver and not in the blood.

Summary

The surgeon should therefore be concerned with (1) the prevention of waterlogging or of mental confusion and stomatitis in febrile, hyperthyroid, or any postoperative cases, as a result of vitamin B deficiency; (2) the prevention of delayed or imperfect wound healing as a result of vitamin C deficiency; and (3) the correction of any abnormality of the clotting mechanism which might be due to vitamin K deficiency.

DOUGLAS B. BELL, M.D.

CLINICO-PATHOLOGIC COMMENT

SHOCK, WITHOUT OR WITH HEMORRHAGE, AND BURNS

Summary

There is here presented a Laboratory Primer, in words of one syllable, on the determination of blood proteins and hematocrit readings, so that the clinician may better meet shock, hemorrhage and burns and may better understand how the clinical pathologist arrives at the reports he issues.

Very much—probably much too much—has been written or spoken on these subjects recently, so that I must apologize for bringing them up again. However, we Americans here in Hawaii, living constantly under the "Sword of Damocles"—or had I better say the "Katana of the Samurai"?—must keep these matters constantly in mind, and have a clearly formulated plan of action to combat these evils. There cannot be too much rehearsing.

Clinical Shock

To the clinician the shock patient, without hemorrhage, has suffered concussion, blast, great pain, destruction of tissue or handling of viscera. He is the one who grows pale, his temperature is lowered, his pulse gets more rapid and thinner, his blood presssure falls and falls, his respiration rate rises, there is a pinched look to his face and he is bathed in cold perspiration. It is the picture of impending death. The astute clinician will usually act on these criteria alone, without help from the laboratory, at least for the time being: plasma, saline and glucose, hypertonic saline, adrenal cortex, heat and supine position come to mind. If time permits, whole blood is given. If there be obvious hemorrhage or hidden hemorrhage (peritoneum or pleura), the severity of the picture is augmented—pallor is marked and air hunger becomes prominent.

A badly burned patient is, to the clinician, another shocked patient, with an exquisitely painful, potentially infected wound or wounds. The surgeon is keenly interested in the degree and extent of the burns, but his main interest is in the patient as a whole. For the time being, he must assuage pain, raise blood pressure, replace lost fluids and proteins and guard against infection and absorption.

Clinico-pathologic Shock

To the clinical pathologist, any one of these three patients is just a pump—the heart—which no longer has an adequate volume of blood to contract on, since much of it has stagnated in the splanchnic area, or has been lost by massive hemorrhage, or oozed out of the burned surfaces. He is also a set of arteries and veins, but they are not so important as the innumerable capillaries, which have become dilated and of increased permeability, leaking plasma, and thereby producing general and local edema. A high-sounding phrase that is really easy to understand makes the picture clearer: *"Protoplasm is simply a hydrophyllic colloid, which, in the presence of acid, imbibes water."* If I had my way, I would have these words inscribed on the wall of every operating room. In other words, the muscle cell, inadequately supplied by blood and oxygen, suffers an anoxia and an excess of CO_2 and lactic acid, and therefore takes what water it can get from the leaky capillaries. By the time the water in the tissues become excessive, the capillaries have become highly permeable to the smaller molecules, and the plasma albumins seep out into the tissues. So there begins the vicious circle—for the blood plasma proteins themselves are hydrophyllic and keep water within the vascular tree, and if they are not there in adequate quantity (7.0 grams per 100 cc.), then water and salts that get into or are put into the vascular tree promptly leak out again. Hemorrhage aggravates the picture by reducing the red cell content, the hemoglobin content, and thereby the oxygen-carrying capacity, of the remaining blood. More red cells—transfusions—are logical, as is the administration of oxygen.*

* If you have oxygen and no masks for giving it, put a gas mask on the patient, plunge a trocar through it, and hook it on to the supply line. I made this suggestion long ago but was frowned on lest the chemical warfare department might object to the abuse of their gas masks.

To the laboratory, the burn case is similar to the preceeding with the additional fact that the burned areas are oozing comparatively large quantities of plasma proteins, water and salt extraneously; these elements also seep into the entire somatic system, until the blood becomes so concentrated as to embarrass circulation by its very viscidity. The ratio of cells to plasma (or serum) rapidly climbs.

It becomes obvious that the rational treatment of shock, hemorrhage and burns includes the replacement of intravascular blood proteins, salts and water—and red cells, if needed. In what case to administer which, and how much, is the question that may face us clinicians and pathologists tonight. How best to keep up capillary blood pressure is still an elusive will o' the wisp.

Laboratory Guides to Treatment

How can the laboratory help the clinician? During the attack, when a large number of casualties are coming in within a short period of time, probably the only real help the laboratory can give is blood typing and cross-matching whole blood from the central bank, which we assume will be available in large quantities.

Interval red counts are useful, but not very. The same may be said of hemoglobin estimations.

I know of no practical quantitative test for adrenal secretory action, though such a test might be helpful in evaluating adrenal exhaustion as a factor in the falling blood pressure.

Analysis of the salts, anions and kations, is too complicated and time consuming to be of any practical value. The value of potassium and sodium determinations is not yet secure. Alkali reserve, CO_2 combining power, pH determinations and the like have no place in the war.

Then what can the laboratory, out here on the veritable battle front, do to help the surgeon? And what are these procedures? The laboratory has only two little tricks up its sleeve to help the intuitive judgment of the clinician in these conditions, and let it be emphasized that they help, not in the immediate emergency, but afterwards. They are (1) the estimation, at intervals, of the circulating blood proteins, and (2) the determination of the volume of red cells in relation to fluid content of the blood. The latter gets the impressive title of "hematocrit reading".

Blood Protein Determination

How may the protein content of circulating blood be determined? One has the choice of working with blood serum, such as is used in the Wassermann reaction, or with blood plasma, the *whole* fluid portion of the blood, including fibrinogen, which is out of the picture in serum. Pure plasma is best secured by the use of heparin as an anticoagulant. How much heparin? We use the American heparin "Liquaemin", deliver 1 drop from a 25 gauge needle into a Wassermann tube, and dry it. It serves to hold a little more than 1 cc. of blood fluid for a prolonged time.

There are at present three practical ways of determining blood proteins:

1. The micro-Kjeldahl method.
2. The falling drop or specific gravity method (pyknometric).
3. The turbidimetric method.

Each has its advantages and disadvantages. The first is highly accurate but slow and tedious. The second is faster, not so accurate, full of personal equations, but at present very well advertised. The third is the least accurate, but quite sufficiently so for clinical purposes. It is very rapid, and that is a consideration if one has fifty or a hundred burn cases, each of which should have one or two or three blood protein determinations each day that he is critically ill.

1. The Micro-Kjeldahl Method

I am sure that the mere mention of the name with its spelling will bring to your nostrils the stink of boiling urine, back in the old "P. Chem. lab." at college. The principle of the micro-Kjeldahl method is to determine the nitrogen content of plasma or serum and, from the nitrogen content, to calculate the total protein content. This, in a little more detail, is done as follows:

A small but accurately measured amount of blood serum is digested with sulphuric acid, hydrogen peroxide and heat. The nitrogen is converted into ammonia. The addition of Nessler's solution develops a yellow-brown color, the depth or concentration of color depending on the amount of ammonia nitrogen present. This is compared in a colorimeter with a prepared standard nitrogen solution (ammonium sulphate) treated in a similar fashion. (Either a visual or a photoelectric colorimeter may be used.) The nonprotein nitrogen, previously determined, is subtracted from the total nitrogen to give serum protein nitrogen. This amount is then multiplied by the factor 6.25 to give the concentration of serum protein.

NORMAL VALUES FOR SERUM PROTEIN

Total serum protein 6.5 to 7.5 grams per 100 cc.
(In Hawaii, normals rarely go above 6.8%)
Serum albumin 4.6 to 6.7%
Serum globulin 1.2 to 2.3%

Total plasma protein 6.8 to 7.8 grams per 100 cc. (Average 7.0)		
Functional water imbalance,	serum protein	5.1
Functional water imbalance,	plasma protein	5.5
True edema,	serum protein	4.5
True edema,	plasma protein	5.0

Serum albumin and serum globulin may be determined by "salting out" the globulin, filtering it, and testing the albuminous filtrate as above, subtracting the albumin value from the total protein value to obtain the globulin value. The ratio of globulin to albumin is normally about 1 to 3.3.

2. The Specific Gravity Method

The specific gravity of blood serum or blood plasma would be highly uninteresting to the clinician, if it were not for the fact that there is a definite linear relationship between the protein concentration and the specific gravity. Ergo, give me the specific gravity of a serum and I can give you its percentage protein content.

How best to determine specific gravity on minimal amounts of serum or plasma? There are three practical ways, the second having two variants: (1) The old-fashioned pyknometric method of weighing a given and known amount of serum, and comparing its weight to that of an equal volume of water. For this purpose one must have pyknometers or specific gravity bulbs, and an excellent balance. It is not practical for clinical work. (2) The falling drop method, recently widely advertised. It depends on the principle that a measured drop of plasma or serum will fall through a given column of a liquid with which it is immiscible at a rate depending on its specific gravity. One has the choice of two falling drop methods. The column of liquid (oil or hydrocarbons), not mixable with watery solutions, through which the drop of serum or plasma falls, may be stable and of fixed and known specific gravity; or it may be variable so that a control drop of an aqueous solution of known specific gravity is needed. The latter method has been widely advertised and is widely used in Hawaii. It will therefore be considered in some detail first.

The apparatus consists of a tall cylindrical water bath which houses glass tubes containing varying concentrations of a xylene-bromobenzene mixture, and a thermometer. The tubes are marked at 30 cm. and the drop of serum or plasma falling that distance is accurately timed by a stop watch to one-tenth of a second. The falling time of a similar drop of a watery solution of potassium sulphate, of accurately known specific gravity, is also observed. These drops are of identical volume, 0.01 cc., delivered from an accurate pipette, with an ingenious mechanical control. The falling time of the known and unknown drops having been determined, and the temperature observed, the specific gravity is determined by a rather complicated set of calculations and the use of a large chart or nomogram. Then from a tabulation, or by use of a formula, the grams of protein per hundred cubic centimeters may be calculated. For real accuracy, the pipettes must be scrupulously clean and dry, the hand that delivers the drop must be very steady as it unhurriedly releases it, the eye must be keen to record the passing of the line by the drop, and there must be no variable reaction time between the eye that observes and the finger that presses the stop watch. When the pipettes are clean and one is quite unhurried (no bombing yesterday, today or tomorrow) this manipulation is a pleasantly fascinating experience, somewhat like clocking trotting horses on a dewy morning on a rural Ohio race track.

The alternative method is rather similar but uses in the tubes a mixture of mineral oil and methyl salicylate through which the serum or plasma falls. This has a known specific gravity and is stable. It does not evaporate as does the xylene-bromobenzene mixture. There is no need for the control standard solutions, which likewise evaporate and vary with evaporation. With only temperature and falling time, specific gravity and therefore protein content may be calculated without recourse to a nomogram.

Both of these methods, however, are time-consuming and tedious, and require considerable manual dexterity. Besides, the presence of undue amounts of bile, blood sugar, lipoid matter, cholesterol or laked hemoglobin nullify the results. Bomb explosions nearby do not add to the accuracy.

8. The Turbidimetric Method

This method depends on the coagulation of the protein in a known dilution of serum under as nearly as possible constant conditions, to the formation of a turbid suspension which is then compared with standard solutions of serum proteins, similarly treated. For that comparison an electric photocolorimeter is most advantageous, for once it is calibrated against known standards, such standards need not be prepared for each determination. An electric photocolorimeter is a machine that costs from $150 to $300 including tax. I suppose it is classed as a luxury. It consists of (1) a transformer that delivers a constant current, (2) a lamp that delivers a constant beam of light, preferably through a choice of light filters, and (3) a set of standard glass containers to hold known and unknown colored solutions which transmit that color to (4) a photoelectric cell which is more or less strongly activated by more or less colored light and responds by generating more or less current. This current is measured by (5) a sensitive milliammeter which gives the readings. A given concentration of a given colored substance, in solution, always gives the same reading through that cell on that milliammeter. We have recently evolved

the following technique: (it probably is not original with us; there is no time, nowadays, however, to look up literature, and it was simpler to try it out in practice).

Into a clean, dry Wassermann tube, measure, from the upper 0.1 cc. of a dry, clean Kahn pipette—taking care to deliver *exactly* 0.1 cc.—serum or plasma (we prefer serum). Add to this 5.0 cc. of saline and mix by inversion. Transfer *exactly* 1.00 cc. of the saline serum mixture to another Wassermann tube. Into a third tube measure 4.0 cc. of the reagent, which consists of 5% sulphosalicylic acid and 1% anhydrous sodium sulphate, in aqueous solution. This 4.0 cc. of reagent is dumped as rapidly as possible into the 1.0 cc. of serum dilution and the tube is promptly inverted 2 or 3 times. After about five minutes, the tube is again inverted and read in the colorimeter. The reading, by means of the calibration chart, is converted directly into total grams of protein per hundred cubic centimeters. Isn't that easy?

To calibrate an electric colorimeter, take normal human serum and determine its protein concentration by the pyknometric method, or the Kjeldahl method, or the falling drop method. If none of these methods are available, it is probably safe, for practical and clinical purposes, to pool a number of normal bloods and arbitrarily assume the protein content thereof, per hundred cubic centimeters, as 6.8 grams for serum, or 7.0 for plasma. For standardization or calibration: into each of a series of tubes containing respectively 5, 6, 7, 8, 9 and 10 cc. of saline, add, from the upper half only of a Kahn pipette, exactly 0.1 cc. of the predetermined or pooled normal serum, and mix. Then to 1 cc. of each of these mixtures add, under constant conditions, 4 cc. of the sulphosalicylic acid reagent, and make readings after five minutes. The first tube corresponds to 6.8 grams, the last to 3.4 grams. These and their readings are charted on graph or semilogarithmic calibration paper. The presence of undue quantities of bile, sugar, lipoids, cholesterol or laked hemoglobin does *not* interfere with the validity of the results; if traces of bile pigment or hemoglobin are noted in the 0.1 to 5.0 cc. mixture, 1 cc. of this mixture plus 4 cc. of saline are first read in the colorimeter to find a subtraction factor, or better, are used to set the colorimeter to the "null" point.

We have made a number of parallel observations on various sera by the above method and the falling drop method; the usual discrepancy, if any, either way, is about 0.2 per cent; and who is to say which was in error, the falling drop or the turbidimetric method? A tabulation of one such sample comparison shows the narrow margin of discrepency:

SERUM	GRAMS OF PROTEIN PER CENT	*Turbidimetric* *Falling Drop*	DIFF. OF FALLING DROP
1	6.95	7.02	+ 0.07
2	6.6	6.68	+ 0.08
4	6.8	6.71	— 0.09
6	7.1	6.70	— 0.40
9	6.95	7.20	+ 0.25
10	6.8	6.68	— 0.12
11	6.3	6.52	+ 0.22
12	6.45	6.42	+ 0.03
17	6.8	6.75	— 0.05
18	6.8	6.61	— 0.19
19	6.6	6.55	— 0.05
		Average	0.14

If there is no electric colorimeter available, a rather crude but reasonably accurate one can be made from a test tube, a piece of wire and a cork stopper as per the diagram. A circle is bent at the lower end of the wire at

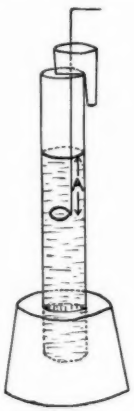

Fig. 1. Home-made turbidimeter.

a right angle and painted black or red—that horrid "jungle red" nail polish serves at least this purpose very well. The wire is inserted in a perforation at the edge of the stopper, so that it may be slid up and down by the handle. The turbid solution is placed in the test tube and, under constant lighting conditions, the wire is pushed down until, with relaxed visual accomodation, the loop becomes invisible. With a millimeter scale, measure the distance from the bottom of the meniscus to the upper side of the loop, "A". After a little practice one becomes adept at nearly duplicating "repeat" readings. Such an instrument could be standardized by the serial dilutions previously mentioned. My own eyes record the six varying standard calibrator concentrations between 15 mm. and 32 mm; on our sensitive photelometer with the color filters the range is only from 17 to 30. This little instrument might not be trustworthy for 0.1 gram variations, but probably is safe for 0.5 fluctuations, and that should be ample for clinical purposes in war times.

If I had fifty or a hundred protein determinations to do each day, during or after a bombing, I certainly would prefer the turbidimetric method—but I certainly would want an assistant to wash and dry the Kahn pipettes!

With the procedure so simple, the clinician need not hesitate to request a protein determination after each administration of plasma, whole blood, or saline, rather than try to calculate the needed dosage of plasma by a complicated formula from a single preliminary determination.

If the clinician should desire a partition of the total proteins into serum albumin and serum globulin, for the sake of completeness, the matter is simple. Of the serum 0.1 cc. is accurately delivered into a Wassermann tube; 0.9 cc. of saline are added, followed by 2.0 cc. of gum ghatti solution—any standard text will explain. Into this 3 cc. are then suddenly dumped 3 cc. of saturated solution of ammonium sulphate, which precipitates out the serum

globulin. After repeated inversions, and after ten minutes, the turbid mixture is read in the colorimeter. Its value in grams, subtracted from total proteins, yields the serum albumin in grams per hundred cubic centimeters. You then have the total serum proteins, serum albumin and serum globulin.

For standardizing or calibrating the colorimeter, one may take a sample of serum and treat it by the "salting out, filtration, digestion and nesslerization process" mentioned in the early part of this effusion to accurately determine its globulin content. For practical purposes, a number of pooled normal sera may be assumed to have a serum globulin content of 1.7 grams per hundred cubic centimeters (the average normal); 0.3, 0.2, 0.1 and 0.5 cc. of this serum are mixed with enough saline to bring the volume to 1.0 cc; 2.0 cc of gum ghatti solution are then added to each tube and mixed, and 3 cc. of saturated solution of ammonium sulphate are suddenly added and mixed, to precipitate the globulin. These standards, which represent 6.8, 3.4, 1.7 and 0.85 grams of globulin per hundred cubic centimeters, are read in the colorimeter and plotted on graph paper.

Total protein, minus serum globulin, equals serum albumin; and normally the ratio of serum globulin to serum albumin is 1:3.3. In nephrosis and the toxemias of infection, pregnancy, scarlet fever and the like, the smaller molecules of serum albumin leak out through the increasedly permeable capillaries, leaving the large molecules of serum globulin behind in the circulation. In these cases the ratio approaches 1:1 or may be inverted. Once the laboratory has the serum for a total protein, it takes only an additional movement or two to get the serum albumin and serum globulin. Turbidimetrically, the determination of total serum protein, serum globulin and serum albumin, with at least clinical accuracy, is as easy as shooting fish. It behooves the clinician to use it about as often as he does the Wassermann reaction and the white and differential count; he will find this tool, after he learns to use it, as useful as the other two.

Red Cell Volume of Blood

The simplest method I know for making this determination is a slight modification of the method used by Dr. Christopher Hamre (*Am. J. Dis. Child.* 60:22 [July] 1940) in making his hematological investigations of Hawaiian normals.

Rather heavy-walled glass tubing of about 2 mm. inside diameter is cut to lengths of 11.3 cm., because that size fits the usual centrifuge tubes. The cut ends are burnished with fine emery paper rather than flamed, to keep the inside diameter constant. Rubber bands for sealing these tubes are made by cutting strips, 1 cm. wide and 24 cm. long, from old inner tubes. The ends are cemented together with rubber cement, overlapping slightly over 1 cm. The joint is reinforced with one staple from the usual office stapling machine.

A saturated solution of sodium citrate is made; it keeps well. For use, a small quantity of half-saturated solution for each day's use is made. The half-saturated solution is drawn into the tube, and expelled. Blood is then drawn, from the finger, or from the sample taken for serum proteins, nearly filling the tube, which is then sealed by the rubber band, the lower end of the hematocrit tube being placed on the rubber overlap. This is then placed in the centrifuge and spun at a given high speed, a given period of time. Only experiment will determine what speed and time will give packing of cells that cannot appreciably be increased by more prolonged centrifugalization. With a millimeter rule, the lengths of the entire column of blood and of the column of red cells are measured, and the ratio reported in percentage. The usual normal values of red cell volume are given as follows:

Females: 39% to 43%; average 41%.

Males: 42% to 50%; average 46%.

(That's why a woman is a better plasma donor.)

Such determinations may be of great value to the clinician, particularly if repeated at intervals, in cases of burns and in hemorrhage, particularly in invisible, progressive hemorrhage.

Conclusion

Shock, hemorrhage and burns are primarily conditions which the clinician must combat with clinical judgment, but he does have these two laboratory aids to assist him.

E. A. FENNEL, M.D.

RE.

QUININE PRESCRIPTIONS

Under the terms of General Preference Order No. M-131 no person is entitled to sell, transfer, deliver, or purchase any quinine except for use as an anti-malarial agent or for use as an ingredient of quinine & urea hydrochloride, U. S. P. for hypodermic use . . .

Further: . . . All purchasers of quinine . . . (except ultimate consumers) . . . must sign a certificate (reproduced below)—and if he uses the quinine other than as an anti-malarial agent or as an ingredient of quinine & urea hydrochloride, U. S. P. for hypodermic use, severe penalties may be imposed upon him for a violation of General Preference Order No. M-131.

Certificate Under General Preference Order No. M-131

I hereby certify that the quinine ordered hereby is for use as (1) an anti-malarial agent or (2) an ingredient of quinine and hydrochloride (U.S.P.) for hypodermic use, and will not be sold, transferred or delivered by me for any other purpose. This certificate is made in accordance with the terms of General Preference Order No. M-131 with which I am familiar.

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EMERGENCY MEDICAL SERVICES

(FORMERLY MEDICAL PREPAREDNESS)

The outstanding item of interest in defense activities since the last report was the alert, which lasted for nineteen days and was terminated only by the good news of the battle of Midway. In general the alert was taken seriously by the personnel, many of them becoming somewhat tense and jittery because of its long duration. There was also a tendency for people to question the validity of the alert because it was not applied to all defense units. It was a good lesson, because even the doubters now realize that there was a very real reason for the alert and it is felt that there will be less tendency for people to question similar orders in the future.

There have been three changes in the duties of persons connected with this organization. Dr. M. F. Haralson resigned his position as Territorial Administrator of Emergency Medical and Related Services on May 18 because of the pressure of his manifold duties as Territorial Commissioner of Health, and Dr. Arnold has been appointed to succeed him as Territorial Medical Director of the Office of Civilian Defense. Dr. Pinkerton has been appointed Territorial Director of Blood and Plasma Banks. His duties will include the direction and control of all Territorial blood and plasma banks under the Territorial Office of Civilian Defense, and he will advise and assist individual banks in their problems of supply, production and distribution. Mrs. Akana has been appointed Territorial Supervisor of Nursing Activities. These appointments should serve better to correlate and coordinate the activities on all the islands, although, for obvious reasons, individual islands will have to assume considerable initiative and responsibility.

The first consignment of "bunny" gas masks for very small children was issued to families living within the evacuation zone. Production and issue of these masks have been of necessity slow and the demand for them is so great that more than mild impatience has been exhibited by parents unsuccessful in obtaining them. Only the aid stations at Pohukaina, Kalihi-Kai and Jefferson were concerned in this issue. When more become available more sections of the city will be supplied through their respective stations.

If circumstances demand it, apparatus for taking blood and making transfusions, as well as for giving plasma, will be placed in all aid stations, thus making possible the immediate treatment of shocked and bled out patients without the danger of delay occasioned by transportation. The blood bank is also arranging to send blood donors to the aid stations and hospitals under emergency circumstances.

Ambulance transportation of invalids living in the evacuation zones is being arranged by means of questionnaires sent to persons reported by the block wardens as being in need of such transportation.

Island medical directors were called to Honolulu for a meeting on May 15 for instructions regarding the distribution of medical supplies to outside islands. There being no lists from civilian sources of hospital supplies requisite for such purposes, Col. King has furnished the Office of Civilian Defense with army lists to be used as a basis for compiling requisitions. It appears from the requests already received that doctors are not recognizing the fact that these hospitals are *emergency* hospitals and that it is not contemplated to include items other than those essential to saving life or preventing unnecessary suffering. Col. King has repeatedly laid down the dictum that, in considering whether a given item is essential or not, the question be asked, "Might it save a life?" It would be futile to attempt to set up these emergency units on the same scale as permanent hospitals. If, in making requisitions, these principles are borne in mind, more efficient and speedy distribution of supplies and equipment will result.

Forty-nine large and 105 small medical and surgical kits for evacuation centers have been assembled and distributed. The large cases are equivalent to a doctor's office equipment on a small scale, and the small cases contain what a doctor might carry in his bag. These will be available to doctors and nurses detailed to caring for sick or injured evacuees.

A training course in the care of casualties was instituted for lay groups on June 9 and the

response has been excellent. Classes are limited to 20 students, and approximately twenty-four classes are now in session, some during the day and some at night.

A large shipment of medical supplies has arrived from the mainland. These supplies will be distributed as rapidly as they are unpacked, assembled and repacked.

H. L. ARNOLD, M.D.

HOSPITAL FACILITIES FOR OAHU

The recent changes in the hospitals of the community, both for the services and the civilian population, plus the addition of many new doctors, warrants a brief outline to bring up-to-date the facilities available and the distribution of patients. A list of hospitals is given below, with their function and capacity, as well as the group of people primarily served. All of these civilian hospitals will permit qualified physicians not on their staffs to admit patients in any emergency and treat them there. This agreement will terminate with the war.

Civilian Hospitals

1. *Queen's Hospital.* This is a general hospital of 350 beds, 300 for adults, 50 for infants, very thoroughly equipped and staffed, and almost any type of case can be adequately cared for in this institution. It is better equipped for brain surgery than any other hospital. Chest surgery can well be done here also.

2. *St. Francis Hospital.* This is primarily a general hospital, with 90 beds for adults and 16 bassinets, making a total of 106 beds. A few extra can be added in an emergency. There are facilities for obstetrics, surgery, general medicine, with laboratory and x-ray equipment, without specialization.

3. *Japanese Hospital.* This hospital is Provisional General Hospital #3, under Army control. The civilian section is a general hospital with 174 beds for adults and 20 for babies. It has the usual facilities without specialization. There is an open staff at present on the civilian section, and civilian doctors may care for their patients in the customary manner.

4. *Kapiolani Hospital.* This is limited to obstetrics and gynecology, with 70 beds for adults and 70 bassinets. A few extra beds can be set up. War casualties will not be admitted.

5. *Children's Hospital.* As its name implies, will be used for children, with 14 years as the upper age limit. There are 104 beds available, some adult size, some cribs and others bassinets.

6. *Shriners' Hospital.* This is a private hospital for the treatment of crippled children, with 28 bed capacity. It is a small surgical hospital.

7. *Leahi Home.* This is primarily a hospital for the treatment of tuberculosis. There are available 40 beds for war casualties. The equipment and the staff are specially suited to the treatment of serious chest wounds. It is advised that this type of case will receive better attention there than in any other local hospital. It is as well, but no better, qualified as other hospitals for other types of surgery. The institution has 500 beds, including 9 bassinets.

8. *Kaneohe Territorial Hospital.* This is a hospital of the Territory of Hawaii, for the care of nervous and mental diseases, with about 1000 bed capacity. Patients are admitted to it in the customary procedure of this type of institution.

Office of Civilian Defense Hospitals

1. *Sacred Heart Academy Hospital.* This has a maximum capacity of about 400 beds, and is reasonably equipped and staffed to care for ordinary medical and surgical cases.

2. *Wahiawa Emergency Hospital.* This has a maximum capacity of about 350 beds and will be able to furnish general medical and surgical care. It has an obstetrical department.

3. *Shriners' Hospital Annex.* There is an annex of 100 beds which will be opened for service only in the event of need arising for it. The annex is an O.C.D. hospital.

4. *Manoa Valley Hospital.* This will not be opened until or unless the situation demands it. Its facilities and equipment are distinctly of an emergency character. Space for 150 patients could be provided and they can get ordinary surgery if needed.

Plantation Hospitals

Plantation Hospitals. There are five plantation hospitals, all equipped with operating rooms, x-ray and laboratory facilities, and for obstetrics. All of them have extra beds on hand, which can be made available for emergency treatment of casualties. The plantation hospitals have been asked to give in writing their permission for any

doctor to join their staffs in case such war casualties occur. These hospitals and their capacities are namely:

NAME	BEDS, ADULT	BEDS, BABIES	TOTAL BEDS
1. Aiea	35	8	43
2. Ewa	37	8	45
3. Kahuku	24	12	36
4. Waialua	37	3	40
5. Waipahu	48	5	53

These hospitals have not yet all agreed to an open staff in case of war casualties.

Dispensary, Waimanalo and Waianae. There is a dispensary at Waianae and one at Waimanalo for use by the plantation personnel. Hospital facilities are scarcely available, but these installations should be kept in mind as being of possible use in an emergency.

Private Hospitals

1. *Wahiawa Hospital.* Dr. Mack at Wahiawa has a small private hospital, which contains a small operating room and some x-ray equipment. There are beds for eight adults, one child and three infants.

2. *Uyehara Hospital,* in Waipahu, has been closed as such, but is an Aid Station.

3. *The Tamura Hospital,* in Waipahu, is privately owned by Dr. Tamura, and has 7 beds for adults and 5 bassinets, with a small operating room.

Military Hospitals

In case of emergency, military hospitals are available for any civilians. When admitted, such patients are under control and treatment of the Army doctors at the hospital. In the event that a civilian doctor finds it necessary to send a patient to a military hospital, that doctor should confer with the officer of the hospital concerned, and the patient will be admitted. However, the Army doctors assume control of the patient. Should the civilian doctor desire to consult, follow the case or operate on the patient, such details must be arranged with the hospital commanding officer in each instance. These courtesies are freely extended in the case of private civilian patients unless there are special reasons for not so doing.

1. *North Sector General Hospital.* This, like Tripler, is entirely a military hospital, a general hospital with facilities for all types of surgery. The hospital is located at Schofield Barracks, and was formerly called the Station Hospital. Women and children are admitted in case of emergency.

2. *Tripler General Hospital.* This is a general hospital of the Army. The surgical section is at the Farrington School Annex. Women and children are admitted in case of emergency.

3. *Hickam Field Hospital.* This is a military hospital located at Hickam Field.

4. *Provisional General Hospital No. 1,* at Kamehameha School. This is primarily a hospital for the treatment of women and children at present, and obstetrics, but will shortly be prepared to do general surgery. The staff is entirely military.

5. *Provisional General Hospital No. 2,* at St. Louis College. This is a general hospital with appropriate facilities, staff and equipment, for the treatment of any type of casualties. The staff is entirely Army. There is also space for women and children for both medical and surgical care.

6. *Provisional General Hospital No. 3,* at the Japanese Hospital. The entire hospital is under military control. The Army section is primarily for the care of contagious diseases.

7. *Provisional General Hospital No. 4,* at Kaneohe Territorial Hospital. The Army portion serves as a general hospital for all types of military needs.

Naval Hospitals

1. *Naval Hospital, Pearl Harbor, T. H.* A general hospital. Equipped and staffed for general medical and surgical work. It has an excellent Neuro-surgical Department. Women and children will be admitted in emergency as war casualties, but facilities for their treatment are limited. Should women and children be admitted in emergency, their early transfer to other hospitals will be necessary.

2. *Naval Mobile Hospital No. 2, Aiea, T. H.* A general hospital. Equipped and staffed for general medical and surgical work. Women and children will be admitted in emergency as war casualties, but facilities for their treatment are limited. Should women and children be admitted in emergency, their early transfer to other hospitals will be necessary.

H. L. ARNOLD, M.D.

HONOLULU BLOOD AND PLASMA BANK

Production

On June 12, 1942, the Honolulu Blood and Plasma Bank had on hand 5,377 doses of plasma, 250 cc. each. Of these 4,698 were fluid, 289 frozen, and 390 awaiting culture. Twenty 500 cc. lots of typed seronegative whole blood, not over two days old, are kept on hand at the central bank at Queen's Hospital at all times.

During the month of May twenty-four physicians borrowed eighteen 250 cc. doses of plasma and fifteen 500 cc. doses of whole blood for the treatment of private patients. Repayment is made by friends of the patient on the basis of one donor per dose of blood, and two donors per dose of plasma. When complete repayment is made, no charge is made against the patient.

Approximately 1,000 doses were dispensed, most of it to the Navy, following the attack on December 7. Since that day, we estimate that over 10,000 donors have given blood. The approximate yield from these should have been nearly 8,000 doses of plasma, but unfortunately the rate of contamination was high during the two weeks immediately following the 7th, and for the lack of filters we have been unable to salvage as much as we had hoped.

The rate of contamination at the central blood bank from the latter part of December to March 31 was 1.25 per cent; for the month of April it was 3.8 per cent, and in May it was 0. per cent. This record compares very favorably with reports from blood banks elsewhere.

Under present conditions our average cost per unit of plasma is approximately $9.87.

The branch blood banks are producing only on a minimum scale, just enough to insure constant practice against the time they may be called upon again to produce at maximum capacity.

A deep freezing unit, capable of freezing 240 units of 250 cc. each in a maximum time of three hours, has been installed at the central bank.

Storage facilities have been made available in 19 hospitals, stores and ice houses in the city, and in 5 such places in the country districts. Plans are now in progress to provide storage facilities throughout the city which would not be affected by damage to the central electric power plant. An auxiliary generator has been installed at Queen's Hospital to supply power for the storage facilities at the central blood bank.

Our statistical studies are by no means complete, but for the period December 24, 1941 to May 30, 1942 there were 4,000 men donors and 1,587 women, divided racially as follows:

RACE	PER CENT
Caucasian	51.
Japanese	24.25
Hawaiian and Part-Hawaiian	8.5
Filipino	5.75
Portuguese	4.
Chinese	2.5
Puerto Rican	1.
Korean	1.
All others	2.

Organization

Just about one year ago the Honolulu Blood and Plasma Bank began its career, sponsored by the Public Health Committee of the Chamber of Commerce, with but three workers on a part-time or hourly basis. Now, under the Office of Civilian Defense, it has fifteen full-time and nine part-time workers. Three of these, including the director, are volunteers.

Personnel organization

DEPARTMENT	PART-TIME EMPLOYEES	FULL-TIME EMPLOYEES
Bleeding room	2	4
Plasma processing	0	3
Plasma storage	0	1
Hematology & blood grouping	2	3
Records & administration	5	1
Filtering & biological lab.	0	3

The bleeding room personnel is composed of two part-time physicians, three full-time registered nurses and one full-time scrub nurse. Dr. John W. Devereux, in charge of the bleeding room, is employed on an hourly basis and has full responsibility for the physical welfare of the donors. He also contacts all donors with positive or doubtful serologic tests to advise them of their condition and reports these to the proper authorities. At the present time such donors represent a little over one-half of one percent of the total. Dr. Devereux is also ex-officio member of the technical advisory committee.

Dr. William S. Ito is employed on a monthly salary and works an average of 14 hours a week. The nurses assist the doctors with the bleeding and it is their responsibility to see that bleeding sets and other equipment are on hand for an emergency. They are responsible for the storage of whole blood and keeping the records. The scrub-up nurse, as her name implies, cleans the used equipment and prepares the next day's equipment for sterilization.

Mrs. Hazel H. Bond is in charge of all administrative details and is secretary to the director on all blood bank activities. Under her direct supervision are five employees. Her duties require an average of 60 hours a week.

Mrs. Bernice M. Hemphill is in charge of the technical work of the central blood bank. This includes supervision of blood grouping, plasma drawing, freezing and storage. Her work also requires approximately 60 hours a week. She supervises eight employees. The employees in the blood grouping department are responsible for the hemoglobin and blood group determinations on an average of 200 people a day. The part-time employees assist in the washing of tubes, slides and other glassware in preparation for the next day's work. The plasma drawing, freezing and storage departments have functions as their names indicate. Our plasma, both liquid and frozen, is stored in 24 different places on the Island of Oahu.

The filtering department is under the supervision of a volunteer, Mrs. Ruth Herter, whose services are most highly valued. This department reclaims contaminated plasma.

The cultural work is being done at the laboratory of the Territorial Board of Health by Dr. Witlin.

The motor corps and the canteen service of the American Red Cross deserve much praise for their work in the blood bank. Two motor corps workers and one canteen worker are in attendance during all bleeding hours at the central blood bank, taking charge of the donors after the bleeding and serving them refreshments and stimulants. These services are much appreciated by both the donors and the blood bank. The American Red Cross also reimburses the branch blood banks for cost of their canteen service.

Under OCD regulations all full-time employees are on a forty-eight hour basis, i.e., 8 to 5 daily, six days a week.

A new building, 40 x 80′, is being constructed on the grounds of Queen's Hospital to house all departments of the blood bank. It is expected to be ready for occupancy about the first week of July.

The Honolulu Blood and Plasma Bank has succeeded in spite of many difficulties. Long hours of work in hot, poorly ventilated and crowded quarters, provided in temporary tumble-down structures scattered widely from the waterfront to various parts of the Queen's Hospital and its grounds, have worked a definite hardship on a very fine group of patriotic and interested workers. To all of them goes the credit for the success we have so far enjoyed.

F. J. PINKERTON, M.D.

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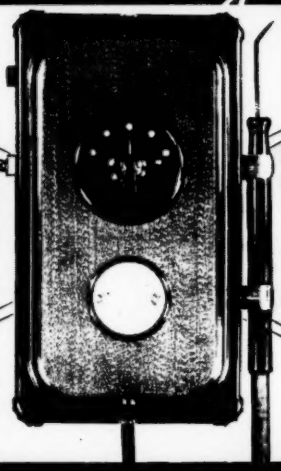

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A. L. CRAIG, M.D.

PRESIDENT, 1941 - 1942

FIFTY-SECOND ANNUAL MEETING
HAWAII TERRITORIAL MEDICAL ASSOCIATION

BUSINESS SESSION

MABEL L. SMYTH BUILDING — HONOLULU, HAWAII

FRIDAY, JUNE 5, 1942

A full scientific session and meetings of the membership and House of Delegates were planned as per program given below. Upon advice from the naval authorities that all medical officers would be continued on the alert due to the developments around Midway Island, and upon their suggestion, it was considered advisable to postpone the scientific sessions but to proceed with the business meetings since outside island delegates were already present in Honolulu.

PROGRAM

SATURDAY, JUNE 6

BUSINESS SESSION—Members and House of Delegates.

PANEL—*Disposition of War Casualties.* Chairman—Lt. Comdr. Albert T. Walker, M.C., USN.

1—*Shock*—Major Chas. A. Young, M.C., USN. S. E. Doolittle, M.D.

2—*Wounds, General*—Lt. Col. August M. Spittler, M.C., USA. Discussant—Comdr. T. W. Downes, M.C., USNR.

3—*Abdominal Wounds*—Lt. Col. Leonard D. Heaton, M.C., USA. Discussant—James R. Judd, M.D.

4—*Chest Wounds*—Joseph E. Strode, M.D. Discussant—H. H. Walker, M.D.

5—*Orthopedic Wounds*—Lt. J. D. MacPherson, M.C., USNR. Discussant—Col. Robert C. Robertson, M.C., USA.

6—*Head Injuries*—Ralph B. Cloward, M.D. Discussant—Lt. H. Hamlin, M.C., USNR.

7—*Blast Injuries*—Lt. Comdr. Joseph Palma, M.C., USNR. Discussant—Robert Perlstein, M.D.

8—*Burns*—Lt. Comdr. P. E. Spangler, M.C., USNR. Discussant—F. J. Halford, M.D.

SUNDAY, JUNE 7

BREAKFAST MEETING—Council and House of Delegates—Pacific Club.

Non-Venereal Syphilis.—Lt. Comdr. E. H. Hudson, M.C., USNR.

Observation of a Recent Epidemic of Typhoid Fever.—Capt. Robert J. Hoagland, M.C., USNR.

Heart Disease in Beriberi.—Lt. Comdr. A. C. McKenney, M.C., USNR.

Psychiatric Problems in Wartime Hawaii.—E. E. McNiel, M.D.

BUFFET LUNCHEON AND ENTERTAINMENT (Wives invited; Kalua pig and Hawaiian entertainment planned).

Note: Medical Officers of the services are invited as guests to the scientific sessions and to the luncheon and entertainment Sunday afternoon.

Registration fee $5.00 for all members of the Association.

MINUTES OF MEETING
COUNCIL

Friday, June 5, 1942, 4:30 p.m.

Present: Dr. A. L. Craig, presiding; Drs. R. O. Brown, D. B. Bell, F. J. Pinkerton, Paul Withington, L. G. Phillips. Also present were: H. L. Arnold Jr., editor; Fred Lam; H. M. Patterson, Hawaii; Webster Boyden, Kauai; H. H. Seiler, Maui; Thomas Keay, Hawaii; G. C. Milnor, H. C. Gotshalk, J. E. Strode, N. M. Benyas, H. T. Rothwell, T. A. Casey, and P. H. Liljestrand.

Purpose: This meeting was called, in accordance with the by-laws, for the day preceding the annual meeting.

Finances: The Treasurer presented a report for the year which was voted to be accepted.

Action on the 1942-1943 budget was deferred until consideration could be given to the individual items slated for discussion.

Hawaii Medical Journal: Dr. Arnold, editor, gave a report of costs as follows:

Cost of JOURNAL, per issue	$500.00
Income from ads, per issue	300.00
Deficit, per issue	200.00
Former cost of mimeographed bulletin, and cost of annual meeting proceedings, pro-rated, per issue	163.00
Actual deficit per issue	37.00
Actual cost of JOURNAL for the year, over former practices	$222.00

He stated that the January (War) issue had been very costly and was responsible for not making a better showing. He made the following recommendations:

a. that the JOURNAL be continued bi-monthly;

b. that each member be assessed $2.00 as subscription to the journal to help with its cost.

Action: It was voted to recommend to the House of Delegates that the HAWAII MEDICAL JOURNAL be continued and that each member be assessed $2.00 per year as subscription to the journal, and

It was voted that the same editorial staff be continued.

Library: The Secretary drew attention to the stipulation in the by-laws that an appropriation be made yearly to the medical library, and reviewed attempts in former meetings of the Council to levy an assessment for this.

Action: It was voted to recommend to the House of Delegates that a sum not to exceed $500.00 be made available for library purposes, pending a report by the Library Committee of the Honolulu County Medical Society of its needs, and a statement that the library will be made available to all members of the Territorial Association.

Budget 1942-1943: With additions voted as above, the budget for the year was accepted as follows:

Balance on hand		$1,373.11
Membership dues expected 272 x 15		4,080.00
JOURNAL: Advertisement 1,800		
Subscriptions 100		1,900.00
Subscription—$2.00 per member		544.00
		7,897.11
Disbursements:		
Rental	300.00	
Salaries	1,800.00	
Miscellaneous	100.00	
Postage	50.00	
President's trip	100.00	
JOURNAL	3,000.00	
Mimeo	25.00	
Annual Meeting	250.00	
Appropriation to Library	500.00	6,125.00
		$1,772.11

Respectfully submitted,
R. O. BROWN, M.D.
Secretary

MINUTES OF MEETING
HOUSE OF DELEGATES

Friday, June 5, 1942, 5:00 p.m.
Mabel Smyth Building

Call: In view of the fact that the general membership meetings scheduled for June 6th and 7th had been called off, and in view of the fact that all but one of the outside island delegates who had come to Honolulu were present, it was agreed to hold the House of Delegates meeting at this time, and the President, Dr. Craig, called the meeting to order.

Roll Call: The following members were present:

President—A. L. Craig
Secretary—R. O. Brown
Treasurer—Douglas B. Bell
Vice-President: Fred K. Lam, H. M. Patterson, A. W. Boyden.
Councillors: F. J. Pinkerton, Paul Withington, L. G. Phillips.
Delegates:
Honolulu—H. M. Johnson, G. C. Milnor, H. C. Gotshalk, J. E. Strode, N. M. Benyas, H. T. Rothwell, O. Lee Schattenburg.
Maui—H. H. Seiler
Hawaii—Thomas Keay

Reports: All reports from component societies as to membership and activities, as required, had been received and placed on file

The following reports were read and voted to be accepted and placed on file:

1. Reports of component societies—Hawaii County (Exhibit A), Honolulu County (Exhibit B), Kauai County (Exhibit C), Maui County (Exhibit D).
2. Report of the Council (Exhibit E)
   Discussion: Dr. Pinkerton asked for a clarification in regard to the ruling, "but those doing private practice on a part-time basis will be required to pay full dues." Upon vote this was clarified to apply to those deriving income from the private practice of medicine aside from their salary for military service.
3. Report of the Secretary (Exhibit F)
4. Report of the Treasurer (Exhibit G)
5. Report of Committees:
   a. Cancer Committee (Exhibit H)
      Action: It was voted to accept the report and to make recommendations to the Board of Trustees of the Queen's Hospital as suggested in the report.
      Action: It was voted that the reports of other committees be publicized in the journal and that the reading of them be dispensed with at this meeting.
   These reports are included herein as exhibits, as follows:
   b. Psychiatric Committee (Exhibit I)

Continuation of Meeting: It was the consensus that the meeting proceed with the business before the House of Delegates rather than adjourn as is customary to the next day.

Hawaii Medical Journal: The recommendation of the Council that the JOURNAL be continued and that each member of the Association be assessed $2.00 per year as subscription to the journal was discussed.

Action: It was voted that the recommendation of the Council be accepted.

Post Graduate Program: It was agreed that consideration for a territorial-wide post graduate program be postponed for the duration.

Library Assessment: The recommendation of the Council that a sum not to exceed $500.00 be made available for library purposes, pending a report by the Library Committee of the Honolulu County Medical Society of its needs, and that the library be made available to all members of the Territorial Association was discussed.

A motion was offered that an assessment per member be levied to raise the $500.00 recommended for library purposes.

Much of the objection advanced by delegates from the outside islands to such an assessment was allayed by the promise to supply each island with a complete catalogue of the books and journals contained in the library, and with an Index Medicus, starting with the current year at least, and possibly back numbers.

Action: It was voted that the assessment per member for the year be $20.00 instead of $15 as previously, this to include subscription price to the journal and the free use of the library by mail.

Action: It was voted that $500.00 be made available to the Library Committee.

Scientific Session: No agreement was reached as to the re-scheduling of the scientific program; it was left to the discretion of the Councillors in Honolulu.

Annual Meeting 1943: It was agreed to defer consideration of this under the emergency conditions and to leave this to the discretion of the Council.

Election of Officers

President:

Dr. Milnor nominated Dr. D. B. Bell.
Dr. Gotshalk nominated Dr. R. O. Brown.
Dr. Brown nominated Dr. J. Palma.
Dr. Lam moved that nominations be closed. Seconded by Dr. Benyas.
Ballots cast. DR. R. O. BROWN elected President for the year 1942-1943.

Secretary:

Dr. Brown nominated Dr. D. B. Bell.
Dr. Patterson moved that nominations be closed.
The Secretary was instructed to cast a unanimous ballot for DR. D. B. BELL for secretary.

Treasurer:

Dr. Lam nominated Dr. N. M. Benyas.
Dr. Brown moved that nominations be closed. The Secretary was instructed to cast a unanimous ballot for DR. N. M. BENYAS for Treasurer.

Councillors:

Dr. Benyas nominated Dr. Pinkerton for re-election.
Dr. Lam nominated Dr. Withington for re-election.
Dr. Gotshalk moved, seconded by Dr. Benyas, that nominations be closed and that the Secretary cast a unanimous ballot for DRS. F. J. PINKERTON and PAUL WITHINGTON to serve as councillors for three years.

Adjourned at 6:45 p.m.

Respectfully submitted,
R. O. BROWN, M.D., Secretary

Report of the Hawaii County Medical Society
(Exhibit A)

E. TOMPKINS, M.D.
Secretary

The Hawaii County Medical Society has been very active during the past fiscal year and has held meetings every month except March 1942.

Attendance at the meetings had been good, but it is very noticeable that since the outbreak of war, our attendance has been much better. Many of the men have been present at the majority of the meetings even though having to travel long distances and in spite of blackout conditions and military restrictions.

Scientific papers presented during the year were as follows:

1. Exanthem Subitum.....Dr. T. Yoshina
2. Local Foods and Racial Dietary Habits.....Mrs. Marjorie Abel
3. Recent Medical Trends on the Mainland.....Dr. William Bergin
4. Semi-annual meeting at Kona Inn, September 6, 1941..
5. Ollier's Disease .....Dr. R. Eklund
6. Bacilli Coli Septicemia; Enchondroma of the Middle Finger (report of cases).....Dr. C. L. Carter
7. Hypofunction of the Ovary.....Dr. A. I. Shimamura

In addition to this, the series of lectures presented to us by Dr. McKhann, Dr. Blankenhorn and Dr. Compere were greatly appreciated and well attended.

In May 1941 the Society began preparations for an emergency as occurred December 7th and had accomplished a great deal through the activity of a Preparedness Committee. This committee has functioned very actively and has laid a great deal of ground work for civilian medical defense. It was recently disbanded with the appointment of one of our members as medical defense director by the governor.

In August 1941 the question of the control of venereal disease was put under study and worked out with the Army authorities. They were successful in drawing up a procedure and set of rules which have met with the approval of the military authorities and have accomplished a great deal in controlling and properly treating all known cases of infectious venereal disease.

The Society was fortunate in having a Councillor present in Honolulu at the time of the December 7 attack, and he was fortunate enough to have the opportunity to do a great deal of work with Dr. Moorhead and could return to us giving a good deal of Dr. Moorhead's methods of treatment and procedures as he saw carried out at that time. This was a great help to the Society in knowing with what they were faced. Another member of the Medical Preparedness Committee, at a later date, visited Honolulu with the express purpose of getting data and information as to the best way to prepare our hospitals for such an emergency. In this way a great deal of knowledge has been obtained so that we are better able to meet any emergency situation should it arise.

At the present time the members of the medical society are cooperating with the Board of Health in forwarding the mass immunization, and the program has been progressing very satisfactory.

Throughout the year the Society's association with the military medical corps has been very congenial and friendly. A large number of these men have been attending the medical meetings in ever increasing numbers.

Report of the Honolulu County Medical Society
(Exhibit B)

N. M. BENYAS, M.D.
Corresponding Secretary

The past year has been a very active one. Up until December 7 many special meetings of the general membership as well as the Board of Governors, were held, mostly in connection with the Hawaii Medical Service Association, and the preparedness program, building

up the aid stations and training the personnel. In this latter program the doctors were very active under the leadership of Dr. Robert Faus and the result of their work was demonstrated to their credit on December 7. Since the 7th, Dr. Arnold assumed the very difficult position of liaison officer between the Military Governor, the Army and the civilian physicians. The Society has tried to cooperate to the fullest in furthering the medical defense plans of the O.C.D. under his guidance.

Following the Blitz, and due to the blackout regulations and the restrictions on night driving, a change in procedure has been made necessary for the regular meetings of the Society. Instead of the general evening meetings on the first Friday of every month the Society now meets weekly at 9:00 a.m. on Thursday mornings in the Mabel Smyth Building auditorium. It was found desirable to have the doctors assemble at frequent intervals to keep informed of current plans and procedures under the defense program, and to enable them to act promptly in deciding questions of group policy. To facilitate this it was agreed to combine the regular Thursday morning clinic of the Queen's Hospital with the meetings of the society, the society taking the first half hour for announcements, discussion, and necessary action in emergency issues, and Dr. Hirsch taking over thereafter for an hour for clinic presentation. This has so far worked out very well and entirely to the satisfaction of the medical society, with an attendance of rarely less than 80 persons. The well prepared clinic presentations have been a satisfactory substitute for the former scientific programs of the society.

A report is given regularly at these meetings of the communicable disease status in the community. In this way the members are on the alert to any potential dangers threatening from this source.

Many members have been called to active duty with the Army and Navy and the Society found it necessary to consider the membership status of these. A policy regarding dues and assessments was adopted therefore, whereby all members in active service are exempt from the payment of these for the duration unless engaged in part-time practice.

The Society has an active Medical Milk Commission which meets regularly and which has had to face large problems this year. The great increase in population demanded an increase in milking herds and feed, which latter was difficult to obtain. This necessitated substitutes while the standards for certified milk remained unchanged. Defense work took laborers from the farms. When the blackout was instituted problems of sanitation and ventilation arose. The commission gave assistance on these problems. Although the bacterial count rose under some of these difficulties, it was quickly brought under control. The Commission employs a full-time secretary-laboratory worker, assisted by a part-time laboratory worker, and a doctor, part-time, to give medical supervision to the dairy employees.

The Board of Governors has been very vigilant and has exerted pressure in the violation of the Medical Practice Act in an attempt to protect the community against unlicensed physicians.

Charges that insurance companies were directing defense workers and accident cases to certain physicians gave rise to an investigation, the result of which will be the apointment of a committee composed of defense worker employers, insurance companies and medical men to consider such problems.

No post graduate course is planned for this year for obvious reasons. A report of last year's post graduate activities would be redundant, having been reported extensively in the JOURNAL.

The Society has endeavored wherever possible to set itself up as a distribution center for the convenience of the doctors. In this manner gas masks, passes, finger printing, liquor permits, gasoline ration coupons, and diathermy permits have been handled.

Report of the Kauai County Medical Society

(Exhibit C)

I. UMAKI, M.D.
Secretary

The Kauai County Medical Society met on every second Wednesday of the month regularly until the advent of the war. Following which meetings were called as often as the occasion demanded; regular meetings being held every month.

A program for the presentation of scientific papers was arranged at the beginning of the year so that at each month meeting some member has had a paper to present. Some of these have appeared in the JOURNAL. We were likewise fortunate to have such men as Drs. Compere, McKhann, Blankenhorn, and Emge present a series of post-graduate lectures with which all the men were much pleased.

A revised constitution and by-laws was drawn up and adopted by the society during the past year.

As previously reported the Kauai Medical Society has through the cooperation of all members organized what we believe to be an efficient civilian medical defense organization. Under the direction of Dr. V. A. Harl and Dr. S. R. Wallis every member has had a job to perform and has given his time and energy willingly.

Dr. Boyden added to the above report that Kauai has four civilian hospitals ranging in bed capacity from 50 to 150. These are not completed, but are coming along, materials and equipment having been ordered. The Kauai Society has lost 17% of its men to the Army and Navy.

Verbal Report of the Maui County Medical Society

(Exhibit D)

H. H. SEILER, M. D.

We have lost 25% of our men to the Army and Navy which puts a lot of extra work on those remaining. Meetings were held regularly. Dr. McArthur is in charge of the medical preparedness program since Dr. Burden went into the Army. We have established three new hospitals completely from scratch at the request of the Army. The first one opened three weeks ago, and the second one opens this week end.

Report of the Council

(Exhibit E)

R. O. BROWN, M.D.

The Council this year held only one meeting at which the outside islands were represented. In the interim the routine business of the Association was carried on by the Honolulu members of the Council.

The two major activities this year had to do with the JOURNAL and the medical service plan for plantation employees.

Reports were received from time to time on the progress of the JOURNAL and special authorization was given by the Council to print a thousand additional copies of the January (war) issue of the JOURNAL because of the special nature of the material it contained. This authorization was given with the understanding that the additional copies would be sold and pay for themselves.

When the tentative plan proposing to establish a medical service plan for plantation employees came to the attention of the Council, a copy of its provisions and an analysis of these were circulated to the county societies and to the individual members of the Association through the JOURNAL. At the December 4th meeting of the Council, at which councillors from the outside islands were present, this plan was thoroughly discussed and it was generally agreed that if a plan were to be adopted for the plantations it should be uniform throughout the Territory and it should be acceptable to the Territorial Medical Association. It was further recommended that the Association proceed to extend to the other counties a plan similar to the one already in operation in Honolulu, known as the Hawaii Medical Service Association plan, and that a representative of the Council appear before the Managers' meeting of the Hawaiian Sugar Planters' Association in December.

A counter plan subsequently was drawn up by the H.M.S.A. intended for territorial-wide use and the H.M.S.A. had begun negotiations with the plantation physicians on this island with the view of building a satisfactory plan for the plantation population, when the Blitz came. The subsequent occupation of both the plantation physicians and others with more acute problems has prevented further progress along this line to date.

In response to Dr. Arnold's request as Director of the Medical Services of the OCD, for recommendations concerning food handlers' examination calling attention to the inadequacies of the present examinations, the Council recommended that the food handlers' examination be either discontinued completely or regulations be set up to insure an adequate examination which should include chest X-ray and stool examinations.

At the meeting of December 4, it was proposed that a territorial-wide post graduate policy be formulated, but the Council voted to defer the matter for discussion at the Annual Meeting of the House of Delegates.

The matter of putting the library of the Honolulu County Medical Society on a territorial-wide basis by the assessment levied against the county societies at the rate of $2.00 per member was discussed and action deferred until the Annual Meeting.

At the April 29 meeting wherein arrangements were made for the Annual Meeting, it was voted that registration fee of $5.00 be charged to all members attending.

Report of the Secretary

(Exhibit F)

R. O. BROWN, M.D.
Secretary

The total regular membership of the Association is 272, a decrease of one over the previous year. By counties this membership is made up as follows:

	REGULAR MEMBERS	MEMBERS IN SERVICE	SERVICE MEMBERSHIP	ASSOCIATE, HONORARY OR LIFE MEMBERS
Hawaii	41	----	----	1
Honolulu	187	23	13	19
Kauai	16	----	----	2
Maui	28	5	----	1
	272	28	13	23

Total all classes—336

The total number of physicians practising medicine in the Territory as of June 1st is 356. Of those eligible, 314 belong to the Association, making 88%, as compared to 82% last year.

Treasurer's Report

Covering the Period
May 1, 1941 - June 1, 1942
(Exhibit G)

D. B. BELL, M. D.
Treasurer

CASH ON HAND, May 1, 1941		$1,303.67
Checking Account	$628.96	
Savings Account	674.71	
RECEIPTS		6,714.94
Membership dues	$3,089.00	
Registration fees—annual meeting	790.00	
Journal:		
Advertisements	1,077.45	
Subscriptions	560.00	
Cash sales	360.31	
Miscellaneous:		
Refund—Projector	758.18	
Refund—postage	80.00	
		$8,018.61
DISBURSEMENTS:		
Annual Meeting	582.85	
Journal	2,458.20	
Postage	150.10	
Mimeographing	7.00	
Salary	1,800.00	
Rental	325.00	
Supplies	68.90	
Furniture & Fixtures	149.65	
Miscellaneous—including projector	1,103.80	6,645.50
BALANCE June 1, 1942		$1,373.11

The above includes $225 registration fees for the 1942 meeting.

Report of the Cancer Committee

(Exhibit H)

G. A. BATTEN, M.D., chairman

It was reported by your Committee last year that the Chamber of Commerce had made $25,000.00 available for the purchase of a deep x-ray unit. It is a pleasure to be able to relate that a 400,000 K.V. x-ray deep therapy machine has been purchased and is now on hand at Queen's Hospital. It has not been installed because no permanent facilities exist for housing it. It appears to be the present plan to defer its installation until after the war when permanent quarters will be built for the x-ray department.

The reason assigned for the delay is that temporary quarters are not available and if available the cost of relocating the unit later on would require an additional expenditure.

It appears to your Committee that these obstacles should not be permitted to stand in the way. If necessary a small building could be erected. The cost of this and the expense of moving it to a permanent location after

the war would be negligible compared to the benefit that would accrue to human lives even over the period of one year, if the war should last no longer than that.

It is suggested that the urgency of the installation of this machine be stressed to the Board of Trustees of the Queen's Hospital since there are numerous cases in the hospitals who are in need of deep x-ray therapy for the treatment of cancer.

During the year addresses on cancer have been made by members of the Association before first aid units, N.Y.A. and other training classes, and an excellent film on cancer has been shown to many groups through the efforts of the Hawaii Health Education Council.

Report of the Psychiatric Committee

(Exhibit I)

R. D. KEPNER, M.D., chairman

This year's Psychiatric Committee has succeeded in getting established the Hawaii Territorial Society for Mental Hygiene, which was Item VI of Dr. F. G. Ebaugh's recommendations made at the time of his survey here in 1937. Members of the Medical Association occupy prominent places in this Society.

After considerable preliminary discussion amongst the membership of the Psychiatric Committee, and some correspondence with various persons and groups on the mainland, the Committee met on December 4, 1941 to discuss three items: (1) the creation of a Territorial Committee for Mental Hygiene; (2) the formulation of a definite program for the education of the public in psychiatric matters, by a series of newspaper articles and addresses before various civic groups; and (3) the initiation of a series of scientific papers on the same subject to be presented before medical groups and published in the HAWAII MEDICAL JOURNAL. It was decided at that meeting to concentrate on the first and let the other two go until later.

The decision was transmitted to the Council of the Hawaii Territorial Medical Association with the following recommendation: "We respectfully recommend to the Council of the Territorial Medical Association, as a commendable project, the formation of a mental hygiene society for this community. We recommend that the Association lend its support and assistance to a general plan such as recommended by the National Committee for Mental Hygiene for state societies."

Although the Council approved this recommendation on December 4, 1941, the war intervened and nothing further was done about the matter until February. Again, after considerable discussion amongst ourselves and with various civic leaders known to be interested in mental hygiene, a meeting was arranged on April 29, 1942 with the following persons: Dr. A. L. Dean, Mrs. Charles F. Honeywell, Dr. W. Harold Loper, Dr. E. E. McNiel, Dr. Frank Midkiff, Dr. S. D. Porteus, and Miss Martha Wood, to learn whether it might be wise to launch such a society at the present time. It was the feeling of most of the persons attending that such a society should be formed, the more so because of the additional emotional problems produced by the war. However, it was believed advisable to discuss the matter further with a larger group before coming to any definite decision because no one wanted to see a society started if the prospects of its lasting were not too bright.

To that end, approximately eighty persons were invited to a meeting with the Psychiatric Committee on May 20, 1942. These persons included the members of the former Hawaii Mental Health Committee and numerous others known to be interested in the problem of mental health. Approximately fifty of those invited attended.

At the meeting on May 20, 1942, it was voted unanimously by those present to establish the Hawaii Territorial Society for Mental Hygiene; to make up its present membership from those present; and to elect a working committee of twelve persons to meet and perfect plans for further organization and activities. This working committee is composed of the following: Dr. R. O. Brown, Dr. A. L. Dean, Mr. O. F. Goddard, Mrs. Charles F. Honeywell, Dr. R. D. Kepner, Dr. E. E. McNiel, Dr. T. M. Mossman, Dr. F. J. Pinkerton, Dr. S. D. Porteus, Mrs. Katherine Ranck, Mr. O. W. Robinson, Miss Martha Wood. A meeting of this group is planned for June 10, 1942. Invited to sit in on the discussions are Major Sidney Posner, Department Surgeon's Office, Farrington High School; and Lt. Comdr. W. E. Kellum, Kaneohe Naval Air Station.

It is believed that this Society will be a very real force for good in the field of mental hygiene in the community, and it is hoped that all the members of this Association will lend their support to the Society. In conclusion, I wish to express my sincere gratitude and appreciation to the other members of the Psychiatric Committee: Dr. M. F. Chung, Dr. R. B. Faus, Dr. E. E. McNiel, Dr. Archie Orenstein, Dr. E. A. Stephens, Dr. T. L. Taylor; and also to Dr. A. L. Dean and Dr. F. J. Pinkerton who have been most helpful in this work.

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